flow

JULY 1955

MATERIAL HANDLING

Production • Automation • Packaging • Shipping

Carroll W. Evans
Explains how standardization and integration of handling and packaging serve in distributing varied parts and accessories ....page 59

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Coordinating Hand and Powered Equipment .....page 66

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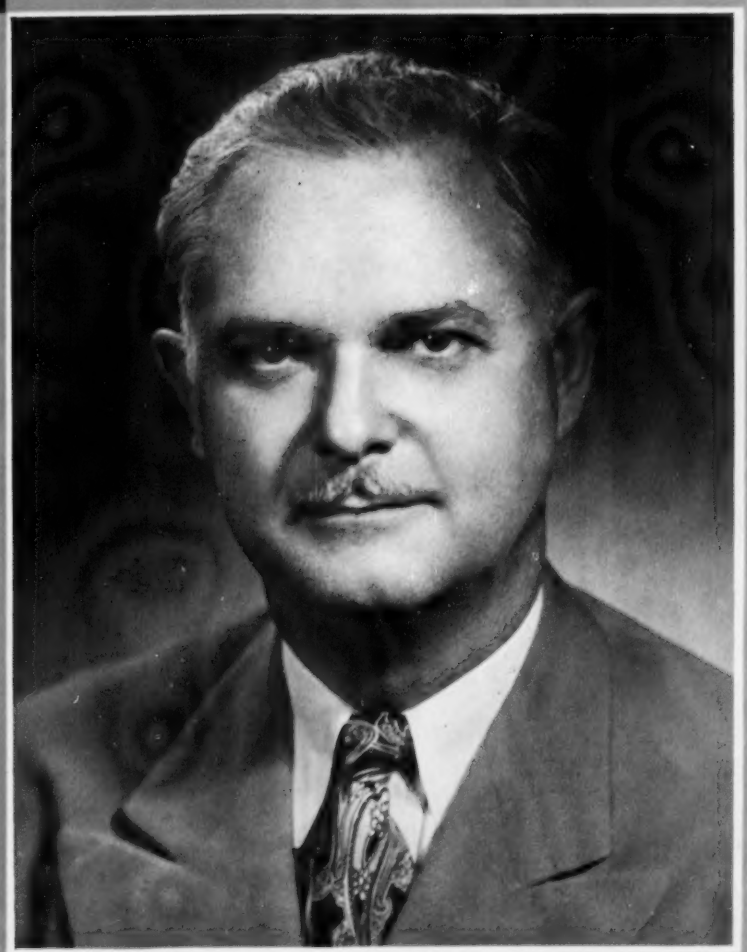
How Handling Helps in Quality Control .....page 80

Continuous Flow in Packaging and Shipping .....page 102

Unitizing Method for Heavy Rolls .....page 106



Warehousing System with an Electronic Heart . . . . page 59

Mechanical organization for orderly, efficient flow

FRANCHISE NO. fc CIRCULATION

NOELTING **Faultless** **CASTER MATERIALS HANDLING FACTS**

No. 10 in a series of Caster Achievements for men in industry

ICE FOLLIES WARDROBES TRAVEL ON FAULTLESS CASTERS

The colorful, spectacular "Ice Follies" is truly a production operation that would be the envy of any industrial executive. The facilities and planning that go into this show are equal to the most advanced industrial manufacturing operations! A 16-car train is needed to carry the personnel, costumes, office, and staging equipment to 23 U.S. and Canadian cities, covering a distance over 20,000 miles each season. It takes 197 specially built castered cases to pack and ship the costumes and staging effects. Years of experience have gone into the design of these cases which are so vital to the needs of this traveling company. All cases have the same basic design for sturdiness and utility. Some filled cases weigh as much as 3280 pounds and others are small enough for one man to lift easily, but all are designed alike. Each case is mounted on Faultless 1121-4 Double Ball Bearing Swivel Plate Casters.

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No. 1121-4 TRUCK CASTER WITH DOUBLE BALL BEARING SWIVEL

Note two, large diameter raceways completely filled with hardened and polished balls for easier swiveling. All raceways are full hardened and accurately formed. Choice of wheels to suit load requirements, and floor surface.

The ICE FOLLIES is typical of the efficiently organized companies who rely on Faultless Engineered Casters for materials handling problems. Their choice of the Series 1100 Caster was based on its over-size King Bolt that holds the top plate and ball bearing retainers firmly together for maximum strength and mobility. Your nearby Faultless Distributor has the knowledge and experience to intelligently recommend the right casters for your particular need, delivered right from his stock. Look for him in your phone directory, or write, no obligation.

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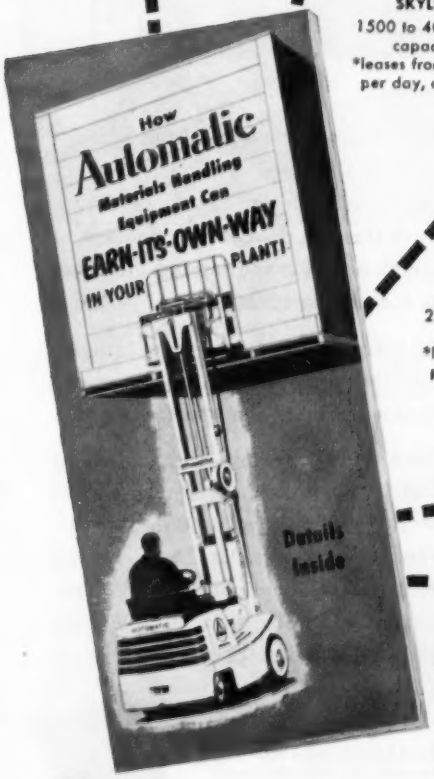

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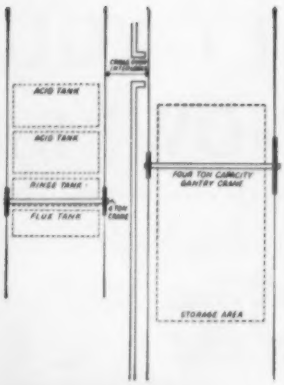
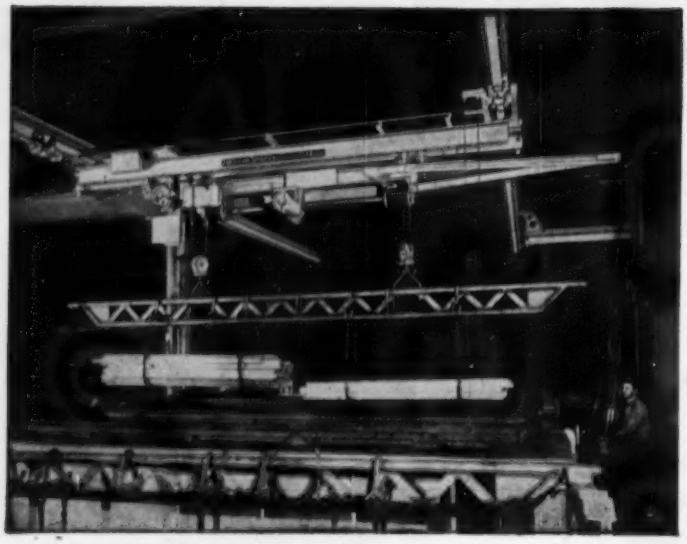


AMERICAN MONORAIL GANTRY CRANE SYSTEM *speeds galvanizing!*



Steel fence posts travel from fabrication to galvanizing over a gantry bridge which interlocks at a crossover track through doorway for passage to the MonoRail crane serving the tanks in the plating room.

All travel on the 4-ton system is motor operated and controlled by push-button station in the operator's hand.

Here is truly team-work handling that results in cost savings as well as increased tonnage through the galvanizing process. It is a typical example of American MonoRail engineering available at no obligation for the solution of your handling problems.

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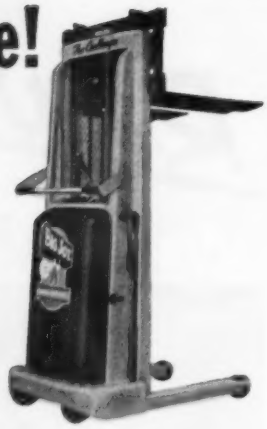

At Last- a mass produced quality machine at low price for materials handling jobs up to 1,500 lbs.

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stores, shops, warehouses, post offices, depots, farms, schools, universities, hotels, hospitals, restaurants, service stations, etc. CAN AFFORD one or more battery operated hydraulic lifts.

More than Ever-

large and small plants alike can economize with *fleets* of BIG JOE lifts to achieve "hydraulic handling for *every* department."

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July, 1955
Vol. 10, No. 10

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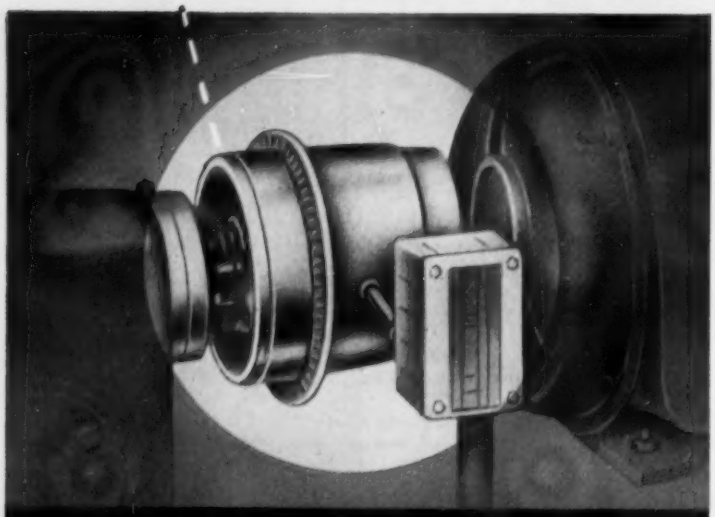

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All communications should be addressed to FLOW Magazine, 1240 Ontario Street, Cleveland 13, Ohio.

CLEVELAND
DAVID E. SAWYER
1240 Ontario Street
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Phone SUperior 1-9622

NEW YORK
LEE HAAS, DISTRICT MGR.
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GLASS – Handle With Ease!

The Problem

A prominent glass manufacturer required a truck for high-stacking plate glass during temporary storage. Each skid load consisted of about 36 glass sheets, 100″ wide by 145″ long. Weight including steel skid averaged 12,000 lbs. The extreme length of these loads would deflect the platform of an ordinary truck enough to cause breakage of glass. Also, the space between shelves in the stacking racks was limited, making it necessary to hold deflection to 1″ at the outer end of the truck's platform so the load could be run into the rack horizontally.

Ordinarily this problem could be solved by building a truck with its platform having a slight slope to the rear, so that when a load was picked up its weight would level the platform. However, the problem was complicated by the need to accommodate existing skid clearances while at the same time provide sufficient trail tire capacity to handle the heavy loads safely.

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ELPAR Engineers designed a truck with a long narrow platform which will fit under existing skids handled by other trucks. They designed the truck's uprights with a slight slope which causes the platform to tilt upward as it begins to rise. This compensates for the normal deflection. Since the platform is level in the lowered position it will go under the skid yet will remain level when the load is picked up.

The Results

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NEW BOOKLET

Explains ELPAR Special Engineering Service in detail. Write The Elwell-Parker Electric Company, 4237 St. Clair Avenue, Cleveland 3, Ohio.

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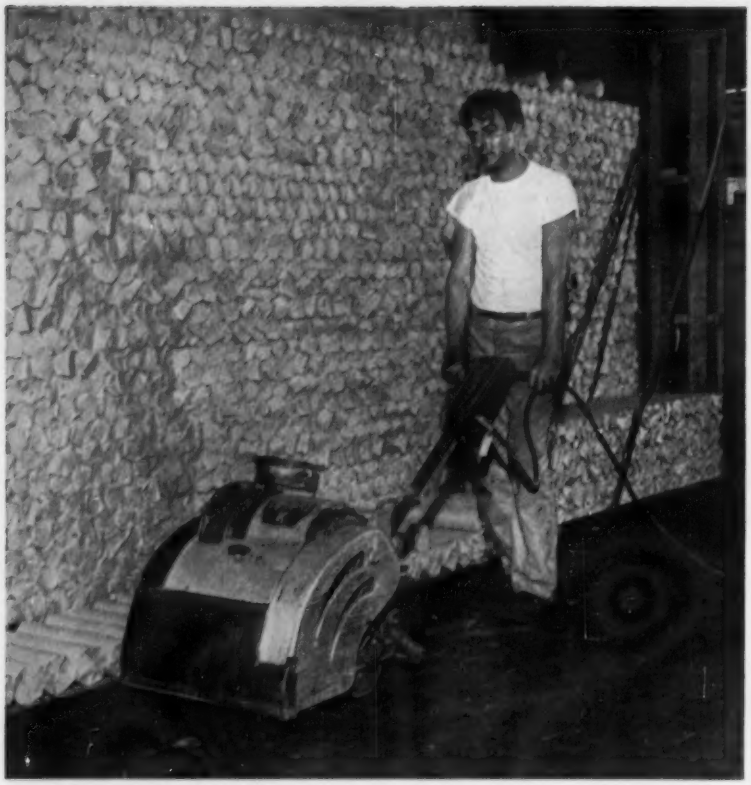

Removing dirt from floors in can manufacturing plant. Packaged cans in background.

he shaves off bumpy "stubble" to make trucking 50% easier

When floors grow beards of bumpy layers of grease-caked dirt, there's no faster "razor" than this—a powerful TENNANT Industrial Floor Machine.

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TENNANT FLOOR MACHINES

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Comments on "Future" Look

The May issue of FLOW just came in and it certainly deserves an immediate complimentary acknowledgement and comment from the front cover right through to the back. I'll be very disappointed in American management if you do not get a raft of letters about the whole conception.

. . . . . this issue should be kept in every library as an outstanding look at our industrial future and how it is going to affect all of us.

It's a funny thing—for the past ten years I've made a point of talking about the future, but it hasn't been until the past two years that the public has shown much real interest—now, everyone is talking about what's ahead. It's almost as if we have all simultaneously come to the conclusion that there is a future for us. The U. S. Chamber geared their whole annual meeting this week to 1975 and made a most impressive presentation. Naturally, conveyors were given substantial mention.

If we can keep this optimism about the future, no power in the world can stop us. I think FLOW has performed a real service in putting out this issue.

R. C. Sollenberger
Executive Vice President
Conveyor Equipment
Manufacturers Association
Washington, D. C.

I am in the process of preparing material to be presented to the Second Annual Materials Handling Training Conference to be held at Lake Placid, New York, June 19 through July 2. I have read with interest the May issue of FLOW and would like to have permission to make slides of some of

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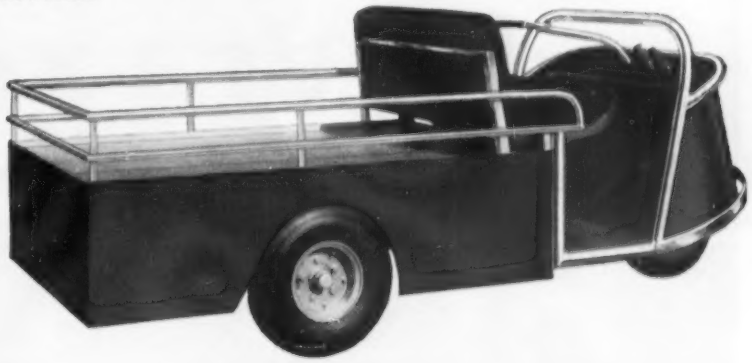

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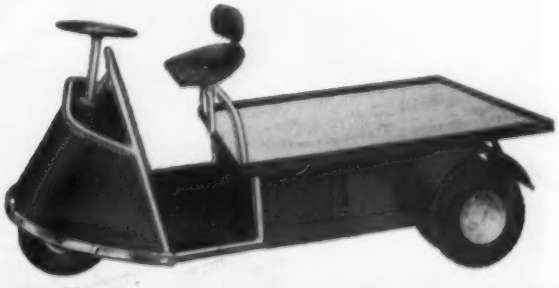

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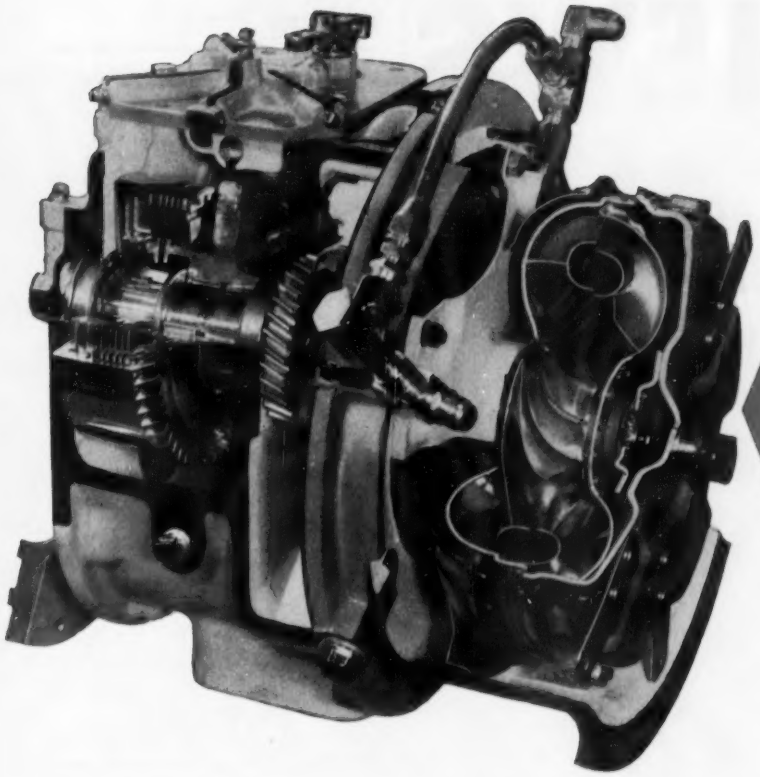

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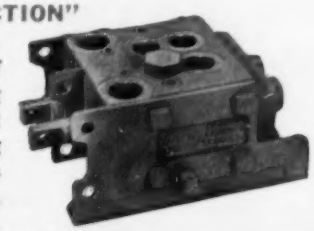
NEW "FEATHER ACTION" VALVE Metering action regulates flow of fluid through lifting valve, giving balanced pressure, eliminating load shock throughout entire hydraulic system, truck and load. Sure, positive lifting action . . . less stoppages . . . more work!



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CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 13, Michigan

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MATHEWS

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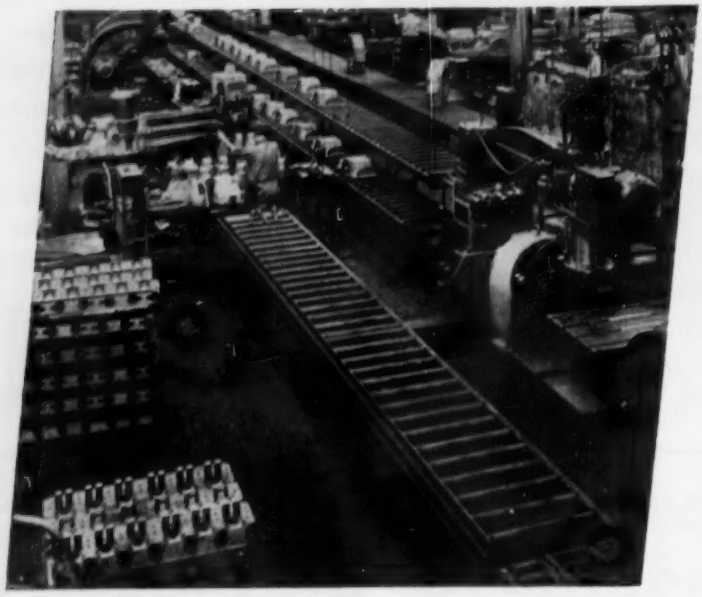

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1905-1955

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Export Representative—Foreign Trade Division of New York Hanseatic Corporation

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the material contained therein.

Specifically, I would like to have tear sheets or reproductions of the illustrations on pages 89, 90, 91, 93, 96, and the four-page insert following page 98.

If you could furnish these, or other suitable reproductions from which I could make slides, I would be happy to give proper credit to FLOW.

James M. Apple, Professor
Industrial Engineering
Michigan State College
East Lansing, Michigan

Congratulations on the May, 1955 issue of FLOW! It's by far one of the most outstanding jobs I have ever seen done by an industrial magazine.

Your concept of looking into the future has given us all some excellent ideas as to what to look for and what to head towards in our master plan thinking.

Irving M. Footlik
Consulting Engineer
Chicago, Illinois

Your issue of May, 1955, is terrific! We would like to have for our reference library reprints or tear sheets of the following articles: Selective Employment . . . By-Product of the Automatic Age, Plant Organization and Personnel Training, and There'll Be Some Changes Made in the . . . Distribution of Bulk Commodities.

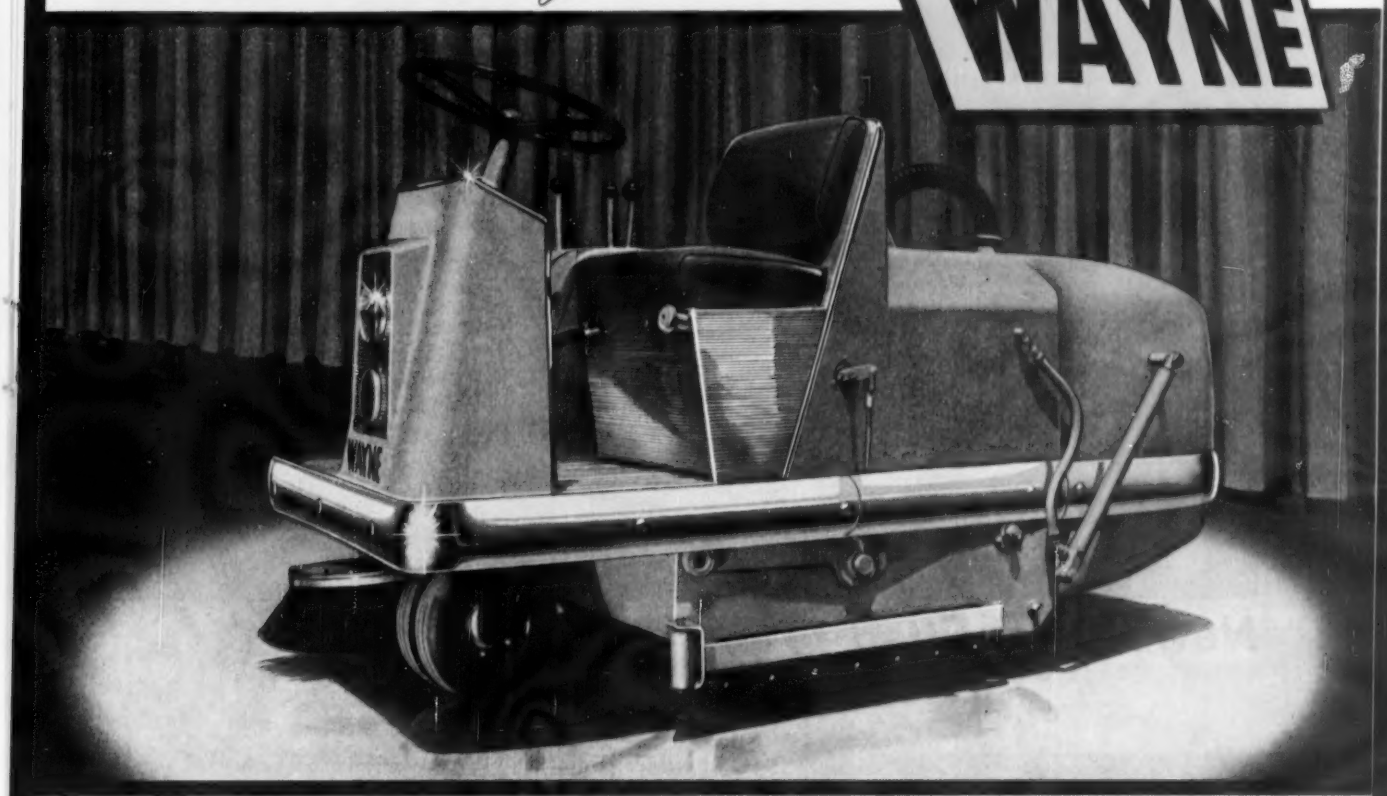
Howard L. Cromwell
Stauffer Chemical Co.
Harvey, Louisiana

Please accept my compliments on your very fine May issue of FLOW. It is this kind of quality that makes a magazine readable and accomplishes the results that we are seeking. Keep up the good work.

Arthur E. Fryer
Acklin-Fryer Associates
Toledo, Ohio

Announcing the new

WAYNE



Sweeps over 100,000 square feet per hour!

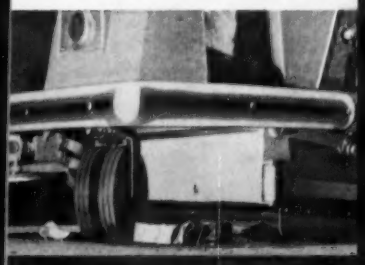
World's Finest most advanced power sweepers!

Completely new years-ahead power sweepers engineered to outlast, outperform any other sweeper!

Only the producers of the famous Wayne Street Sweepers could make a power sweeper so rugged, dependable and efficient. It's *performance* that counts, and these exclusive features make the new Wayne the most economical and practical power sweeper you can buy! • New Advanced design with automotive-type steering affords greater maneuverability. • Largest Hopper Capacity. • Vacuum Cleaning Hose Connection. • Extra Power gives greater sweeping capacity, ability to climb the steepest grades.

"power-flex" action

Enables Wayne to pick up larger objects or to travel without sweeping if desired.



power dumping

Hydraulically operated while driver is seated. Disposes of refuse in one quick, simple operation.

"filter-vac" dust control

A revolutionary new design principle. High velocity fan deposits fine dust into main dirt hopper automatically. No dust bag to empty.

"reach-easy" controls

All control levers can be operated by driver while seated. Provides for maximum safety and control.

WAYNE MANUFACTURING CO.

World's Largest Producer of Power Sweepers for Cities and Industry

Write for new illustrated literature and further information to: WAYNE MANUFACTURING CO. 1214 E. Lexington Street • Pomona, California

Dealer Inquiries Invited.

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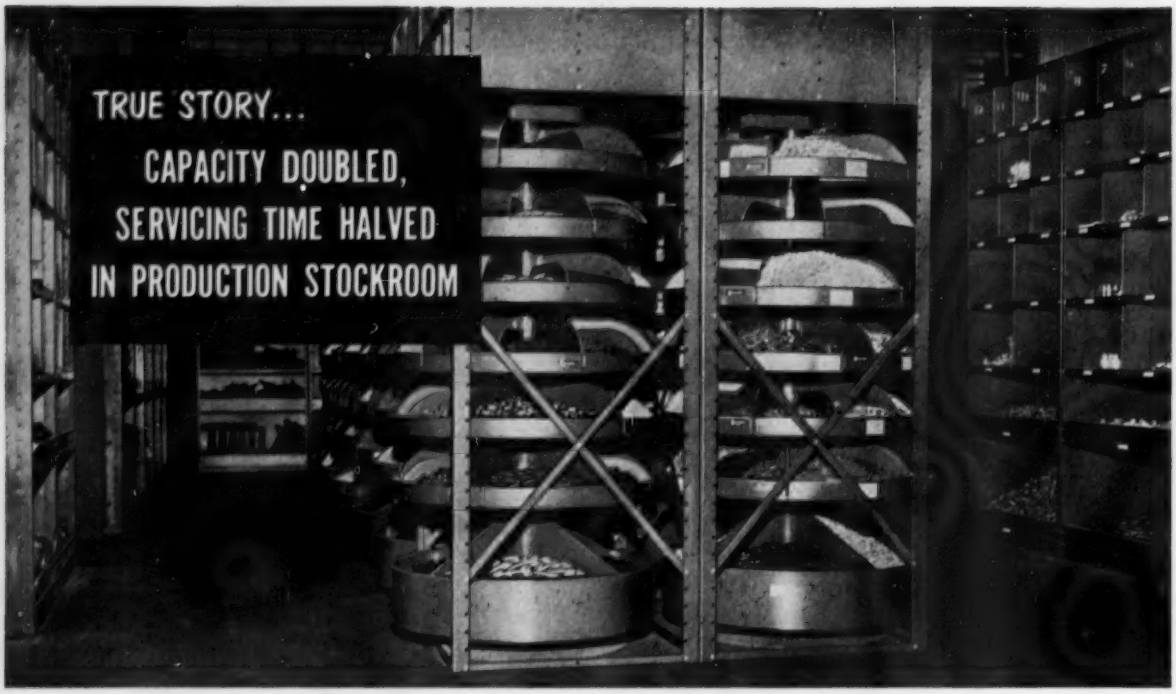

New ideas, fitted to each storage job, return large savings

To provide part of the space for an additional assembly line, a large Ohio manufacturer was forced to reduce the production storage area by 20%.

With the help of F-G-M, the reduced-area stockroom stores more than the previous one and services it far more efficiently.

1. In the reduced area, binable items are stored in less than half the space previously used.
   Space is available for reserve stock, palletized items formerly stored in another building.
2. Over half the items are within 20 feet of the issue window, greatly shortening time required for issuing and receiving material.
3. Except for one day's overtime for four employees, the move was completed during regular working hours.
4. One man, instead of two formerly required, now easily operates the stockroom.
5. Ample provision is made for expansion, and the clean, orderly arrangement is an incentive to good housekeeping.
6. Savings in time and space will quickly pay for the complete installation.

A look into your own storage condition may effect comparable savings for you. Send for your copy of "How to Double Your Warehouse Capacity."

The Frick-Gallagher Mfg. Co., Inc.,
105 So. Michigan Ave.,
Wellston, Ohio.

FGM

"KNOW-HOW"
. . . increases storage capacity
. . . reduces servicing time

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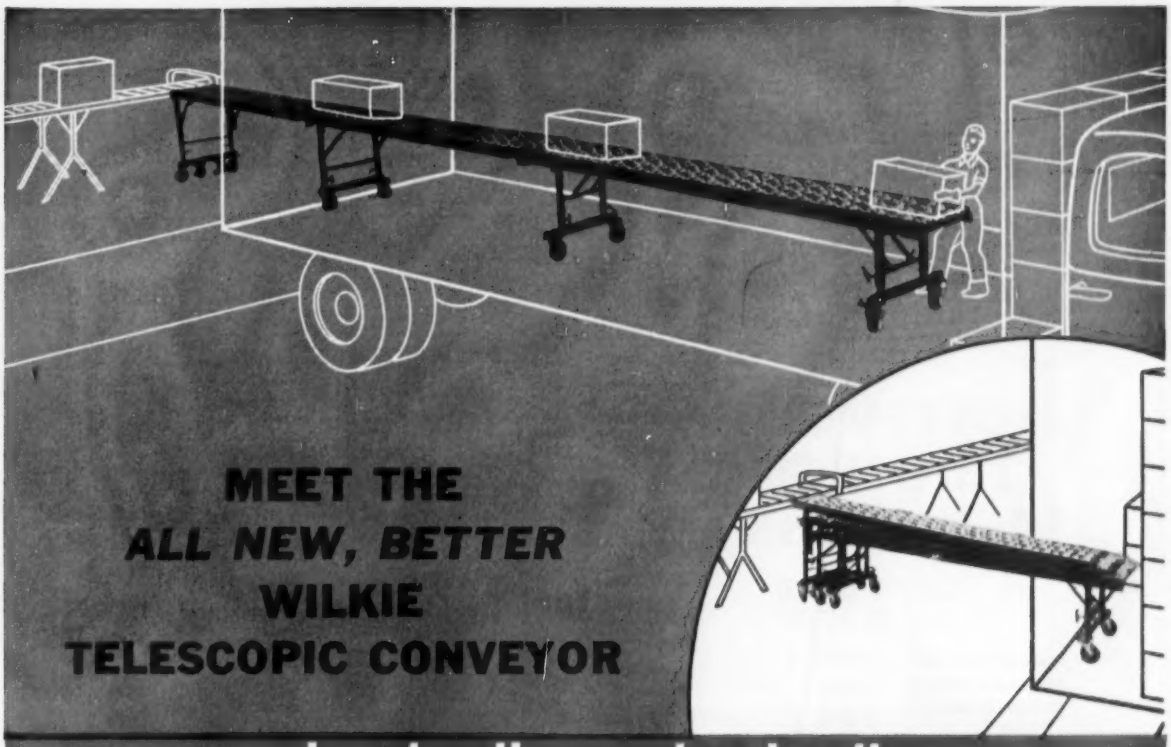


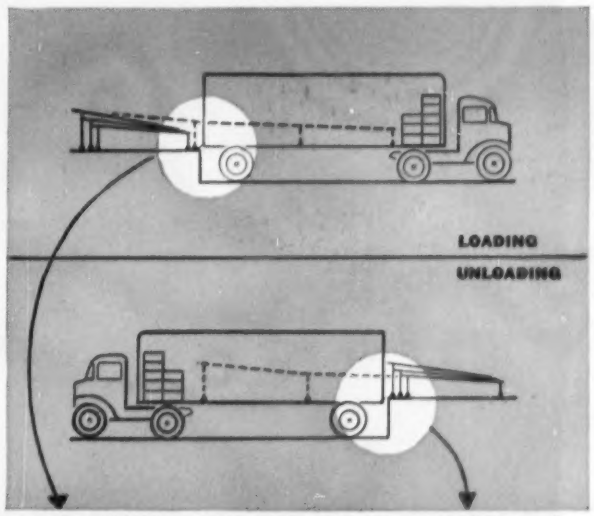
MEET THE *ALL NEW, BETTER* WILKIE TELESCOPIC CONVEYOR

makes loading and unloading FASTER, SMOOTHER, EASIER!

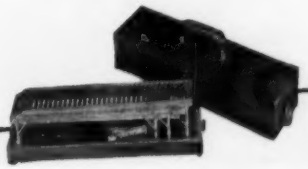
In trailers, box cars or warehouse, follow the load with Wilkie Portable Telescopic Conveyor to speed material handling, lower handling costs. So great are the savings that initial costs are often returned in a few months, even when Wilkie Conveyors are used only part time.

The newly designed Wilkie Telescopic Conveyor "pulls-out" or "pushes-in" at either end on roller bearings with only feather-touch effort. Once set up, no adjustments ever have to be made as the heights and pitch accommodate more than normal variations.

For the full story on how Wilkie Telescopic Conveyors can benefit you, fill in the coupon now!—standard telescopic wheel and roller models meet most every need.



SELF-ADJUSTING . . . Plus or minus differences between trailer floor and platform, sloping floor or sloping runway . . . the Wilkie handles them all without adjustment. The angle of slope changes but never the height of the legs.



WILKIE COMPANY
5520 Arch Street
Philadelphia 39, Pa.

Please have representative demonstrate working scale model of the Wilkie Telescopic Conveyor. ☐

Please send me complete literature on the new Wilkie Telescopic Conveyor. ☐

NAME .....

COMPANY .....

ADDRESS .....

WILKIE
TELESCOPIC CONVEYORS

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TAKE A LOOK THROUGH THE EYES OF A LIFT TRUCK OPERATOR

...and you'll see why visibility has real cash value.

It's as simple as this: A lift truck operator has to *see* what he is doing in order to work efficiently...whether he is stacking or maneuvering in close quarters. *The better he can see, the more work he can do in a day!*

Extra Visibility means faster approach, faster and more accurate engagement with the load —whether palletized or not.

Extra Visibility is a point of superior quality in all Hyster Industrial Trucks. Get on a Hyster Truck and *see the difference.* Call your Hyster Dealer. He will be glad to show you.

Materials handling trucks from 1000 to 30,000 lbs. capacity.

HYSTER COMPANY

2931 N. E. Clackamas Street, Portland 8, Oregon
1031 Myers Street, Danville, Illinois
Hyster N.V., Nijmegen, The Netherlands

FOUR FACTORIES: PORTLAND, OREGON; DANVILLE, ILLINOIS; PEORIA, ILLINOIS; NIJMEGEN, THE NETHERLANDS

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PUSH-BUTTON PENDANT
OR CABLE CONTROL

There's a speedy dependable

ARO

PRODUCTION AIR HOIST *to fit your job!*

2,000 lb.
1,500 lb.
1,000 lb.
500 lb.
300 lb.
100 lb.

VARIABLE SPEED . . . 1000 lbs., 0 to 38′ per minute . . . 2000 lbs., 0 to 20′ per minute . . . load can be inched or zipped.

AIR-POWERED FOR SAFETY . . . no spark hazard . . . explosion-proof motor . . . can't burn out . . . can't overheat . . . unaffected by dust or fumes.

LIGHTWEIGHT . . . only 28½ lbs. for 1000 lb. hoist . . . 2000 lb. hoist weighs only 47 lbs. Overall length all models, 10½″ to 11¼″.

TRY THIS WITH ANY OTHER HOIST!

You can inch so slowly that you can touch an egg without breaking it!

ARO ® **AIR HOIST**

Also . . . Air Tools . . . Lubricating Equipment . . . Aircraft Products . . . Grease Fittings

SEE YOUR ARO DISTRIBUTOR

THE ARO EQUIPMENT CORPORATION

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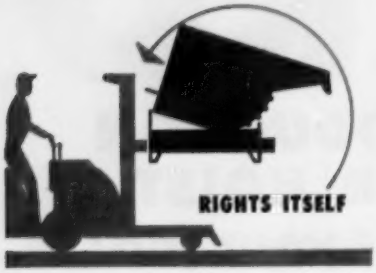
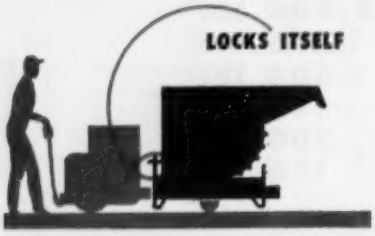




Cuts hand unloading costs 50% or more

Figure it out yourself. Compare the cost of this one-man semi-automatic operation with the time and labor involved in hand-unloading. The answer is obvious. Hundreds of leading industries have proved it . . . and are using thousands of Roura Self-Dumping Hoppers for handling wet or dry, hot or cold bulky materials.

Roura builds 'em rugged. They're made of extra heavy gauge metal with sturdy welded joints to stand up under the terrific knocks and bangs of rough handling. Fit any standard fork or platform lift truck. Also available mounted on live skids—casters with malleable or rubber tired wheels. Sizes from ½ to 2 cubic yards.

Let Roura help *you* cut costs.

ROURA
Self-Dumping
HOPPER

WANT MORE FACTS?
We'll give you full details . . . without obligation . . . If you'll attach this coupon to your letterhead . . . sign your name . . . and mail to . . .
ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

Circle No. 136 on Reader Service Card

Calendar of Events

June 19-July 2
Material Handling Training Conference,
Lake Placid, New York

July 3-6
Caster & Floor Truck Mfgrs. Assoc.,
Bermuda

July 12-14
Western Plant Maintenance Show,
Pan Pacific Auditorium,
Los Angeles, California

September 6-8
Material Handling Institute,
Greenbrier Hotel,
White Sulphur Springs, West Virginia

September 6-17
Production Engineering and Automation Exposition,
Navy Pier,
Chicago, Illinois

September 6-17
Machine Tool Show,
International Amphitheatre,
Chicago, Illinois

September 12-16
Instrument Society of America,
10th Annual Conference and Exhibit,
Shrine Exposition Hall and Auditorium,
Los Angeles, California

September 20-22
10th Industrial Packaging & Material Handling Show,
Kingsbridge Armory,
New York, New York

October 5-9
World Plastics Fair & Trade Exposition,
National Guard Armory,
Exposition Park,
Los Angeles, California

October 17-21
National Metal Exposition & Congress,
Convention Hall,
Philadelphia, Pa.

October 24
2nd Montreal TIPAC Forum,
Sheraton-Mount Royal Hotel,
Montreal, Canada

November 8-10
4th Canadian National Packaging Exposition and Concurrent National Conference,
Automotive Building,
Canadian National Exhibition Grounds,
Toronto, Canada

November 14-17
Second International Automation Exposition,
Navy Pier,
Chicago, Illinois

when PROFIT hangs in the BALANCE...

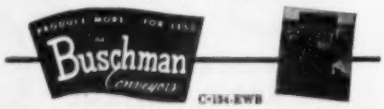
...SPECIFY BUSCHMAN CONVEYORS

Produce more . . . handle more . . . at lower cost . . . with an efficient conveyor system that meets your exact needs. BUSCHMAN builds quality conveyors of all types . . . portable wheel and roller, live roller, horizontal powered-belt, overhead and table-cable, floor-to-floor, apron and slat as well as special conveyors.

BUSCHMAN engineers will assist in surveying your plant and will recommend the most economical and efficient conveyor for each application . . . receiving, production, packaging, warehousing and shipping . . . or they can design a system that will streamline your entire materials handling operation.

COMPLETE CONVEYOR SYSTEMS FOR ALL TYPES OF INDUSTRIES
ENGINEERED • MANUFACTURED • INSTALLED

Write today for literature



C-134-EWB

THE E. W. BUSCHMAN COMPANY
4450 Clifton Avenue • Cincinnati 32, Ohio

Circle No. 30 on Reader Service Card

TRAMBEAM

speeds production at

WESTINGHOUSE

jet engine plant

Here's why jet engine production moves fast at the Westinghouse plant in Kansas City, Missouri! Used in *seven* departments, Trambeam Overhead Handling Systems simplify tool movement to and from machines and speed handling of parts-in-process between machines or to temporary storage. Output per man and per machine is high. Plant areas are *fully* utilized. The need for floor-borne handling equipment is reduced, and traffic bottlenecks are prevented. At Westinghouse, flexible Trambeam is always available when needed, where needed . . . easily push-button operated by one man. Look to Trambeam for your own handling needs!

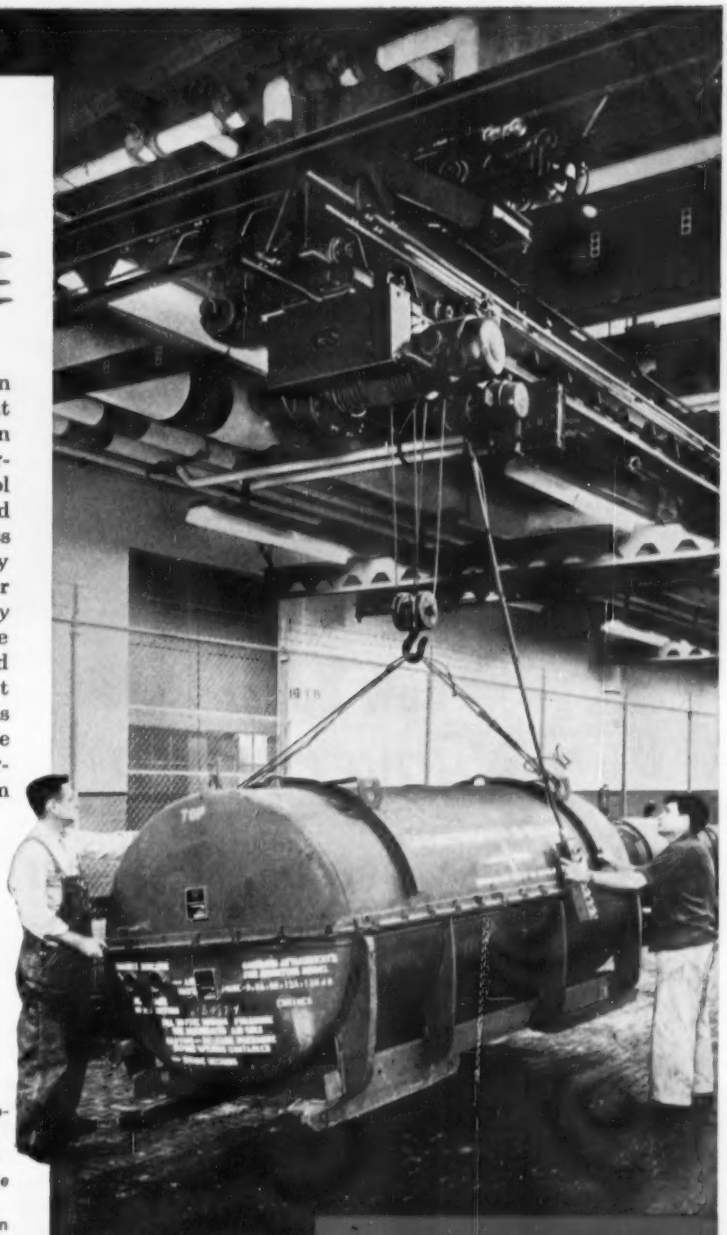
An interesting and informative case study has been prepared on the Trambeam installation at Westinghouse. Send for your free copy today, and the name of your Trambeam distributor.

TRAMBEAM
Dollar-wise Features

- Cranes for complete area coverage . . . monorail for point-to-point transport.
- High carbon rails assure long life operation.
- Flexible suspension minimizes bending fatigue and keeps load stress vertical.
- Friction-reducing carrier design has Timken double row, tapered roller bearings.
- Underhung carriers provide maximum headroom, greater speed and improved control.
- Capacities up to 15 tons with full motorization.

WHITING CORPORATION
15659 Lathrop Avenue, Harvey, Illinois

Other Whiting Products:
Trackmobile • Overhead Engineered Cranes • Electric Furnaces and other types of Foundry Equipment • Chemical Processing Equipment, such as Evaporators and Spray Dryers • Railroad Equipment and Metal-cutting Machinery



WHITING

TRAMBEAM

Here Trambeam is used to quickly move a packed jet engine to the shipping department . . . one of the seven Trambeam equipped departments at Westinghouse.

Circle No. 164 on Reader Service Card for more information

new Baker

SHOVELOADER

saves up to $400 on initial cost

Now you can mechanize your bulk handling operations for less than $10.00 per day for one year . . . much less than you pay a laborer with a hand shovel!

This rugged Model 20 SHOVELOADER has a lifting capacity of 1500 pounds, and lifting height of 7 feet. Standard bucket size is 12 cubic feet. Loader arms are in *front* of operator—not around him—protecting him from injury and providing full 360° visibility at all times.

Four forward speeds with top travel speed of 14 MPH make this a *fast* machine and insure better operation on ramps and rough ground conditions.

Bucket tilt-back at ground level means a full load at every grab, and permits low carrying position for travel. Other advantages are longer forward reach, greater longitudinal stability, extremely low maintenance because of easy accessibility of all parts requiring service, and design of the husky, trial-proven engine.

Special attachments are available for special jobs—forks for palletized loads, crane hooks for hoisting, and special buckets for dense materials. Catalytic exhaust system is available for inside work, where required.

Compare these and SHOVELOADER'S many other features with loaders costing $350 to $400 more! Write for complete information. The Baker-Raulang Company, 1219 W. 80th St., Cleveland 2, Ohio.

Baker
HANDLING EQUIPMENT

5582

Circle No. 18 on Reader Service Card for more information

• **J. L. Pischke**, president of The American Monorail Company, was elected president of the Monorail Manufacturers Association. Vice president of the association is Elmer R. Ransom, Richards Wilcox Manufacturing Company. Pischke appointed G. E. Seavoy, vice president of Whiting Corporation, chairman of the group's engineering committee.

J. L. Pischke

• **"A complete sell out"**, is what the Material Handling Institute has to say about its exposition of 1956. Space assignments were made at a meeting of Institute members recently. Date of the exposition is June 5 through 8, and the place is Cleveland, Ohio's public auditorium and exhibit halls.

• **The Detroit chapter** of the American Material Handling Society has prepared an organization and procedure of operation for a national material handling equipment standards program. The activity was developed at the request of users and suppliers in the industry. Wayne University cooperated with the standards committee in compiling the data.

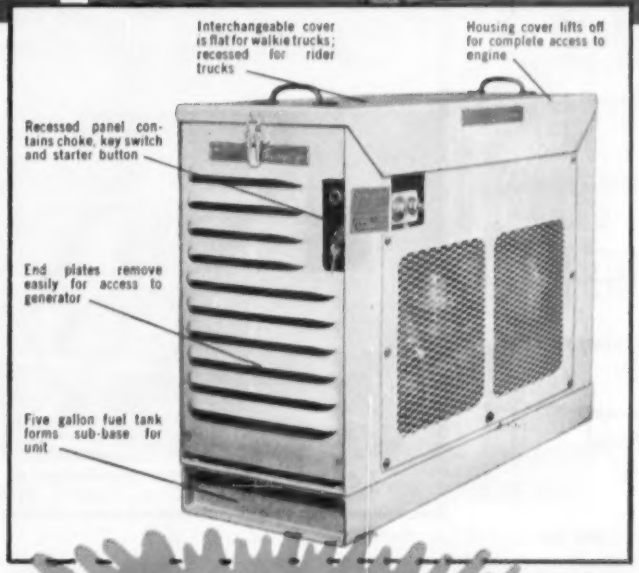
• **First to receive** the W. J. Dernberger scholarship in the field of material handling was Harry H. Kalajian, Wayne University industrial engineering graduate student. The

Everything is NEW on this BANTAM

Ready-Power Gas-Electric Power Unit

FOR MOTORIZED WALKIE TRUCKS

FOR RIDER TRUCKS UP TO 2000 LBS.


Interchangeable cover is flat for walkie trucks; recessed for rider trucks
Housing cover lifts off for complete access to engine
Recessed panel contains choke, key switch and starter button
End plates remove easily for access to generator
Five gallon fuel tank forms sub-base for unit

new PERFORMANCE

Quick, positive starts are assured with new 12-volt automotive-type starting and ignition system. *Complete choice of idling speeds* is yours because truck contactors are battery energized. New positive type governor.

new ACCESSIBILITY

Just lift the top cover and all engine accessories, controls and instruments are within easy reach. Louvered end plate can be removed in minutes for complete access to generator.

new VERSATILITY

The Ready-Power bantam model "W" is designed with *no projections*. It fits practically all makes and models of walking and small riding-type electric trucks. Interchange from truck to truck presents no problem.

Here's the most foolproof, most compact, most dependable power generating unit ever built for small truck use! Months of job testing have proved that it is ideally suited for all the jobs that small trucks must do. Ready-Power gives your trucks full electric power all the time with no fatigue, no letdown. Put it to work for you soon!

TRIAL OFFERED
IN YOUR PLANT—ON YOUR TRUCK

See the new Bantam Model W in action, right in your plant. A Ready-Power sales engineer will arrange all the details. Fill in and mail this coupon.

the All New

READY-POWER

BANTAM MODEL W

The READY-POWER Co., 3838 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

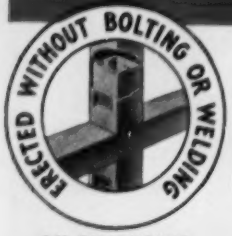
THE READY-POWER COMPANY
Detroit 8, Michigan

Gentlemen:
I am interested in your new Bantam Model W.
☐ Please send complete information.
☐ Please arrange a trial in my plant.

Company_____
Address_____
City_____ State_____
Signed_____ Title_____

Circle No. 129 on Reader Service Card for more information

"Stack up" with American STORAGE RACKS

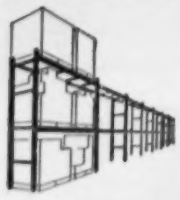


AN EXCLUSIVE AMERICAN FEATURE

....Cut your Handling and Warehousing Cost

When you "stack up" with American Tubular Storage Racks, you also "stack up" savings. The ingenious and simplified American feature, "erected without bolting or welding," has made them first choice with many businesses both large and small. American Racks are designed to meet practically every storage need. Send for catalog and get the facts on American before you buy any type of rack.

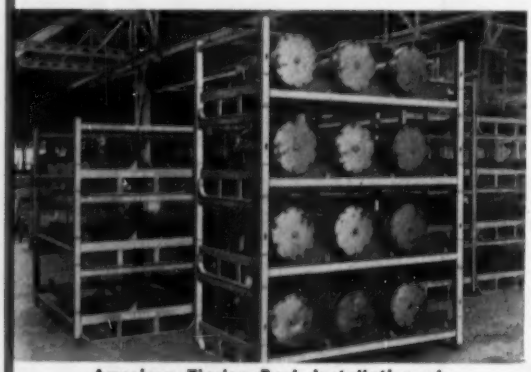
send for catalog



Standard Pallet Racks

Adjustable Pallet Racks

Skid Racks



American Tiering Rack Installation at Studebaker-Packard Corp., Detroit, Mich.

Tool & Die Racks

Drum & Barrel Racks

Coil Racks & Tiering Racks

AMERICAN METAL PRODUCTS CO.

STORAGE RACK DIVISION
5959 Linsdale • Detroit 4, Michigan

Circle No. 41 on Reader Service Card for more information

scholarship is offered jointly by the American Material Handling Society and the Material Handling Institute to promote research and development in the field of material handling. Kalajian will utilize the scholarship in compiling a graduate essay on the subject of national standardization in the material handling field, as well as assisting in the establishment of a material handling library at the Materials Management Center.

• **R. C. Sollenberger,** executive vice president of the Conveyor Equipment Manufacturers Association, recently spoke to members of the Milwaukee chapter of the American Material Handling Society. He told the group that without more automation and other forms of mechanization to increase worker productivity, the American standard of living will drop at least 10 percent before 1960. This, he said, is because the population is increasing at a much more rapid rate than the labor force.

• **Total industry shipment figure** for the month of February was $37,994,068, according to a release from the Material Handling Institute.

• **New officers** were elected for a two year term by the Northeastern Ohio Division of the Society of Industrial Packaging and Material Handling Engineers. John D. Velardo of FLOW succeeds John Kraus as president. Vice presidents are D. A. Williams, Wolf Envelope Co., and F. L. Audino, Lamp Division, General Electric Co. A. A. Ballew, Thompson Products, Inc. is secretary and H. M. Humphreys, Inland Container Corp., treasurer. D. A. Henderson, National Carbon Co., and Kraus were elected to the board of directors.

"Longer tire life — reduced maintenance costs"
says International Terminal Operating Co., New York
"We operate 400 lift-trucks in steamship terminal and stevedore service, and we depend on U. S. Royal Innacush Tires to keep our cost-per-hour down. They give longer tire life and, with their softer ride, reduce vehicle vibration and maintenance costs."

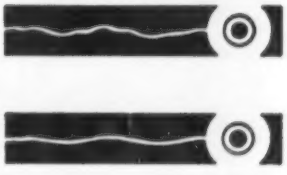
Down Goes Your Cost-Per-Hour

with this softer-riding tire!

According to large operators of lift trucks, cost-per-hour drops 'way down when they use U. S. Royal Industrial Tires.

One of the most popular of these tires is the U. S. Royal Innacush. It has an exclusive U. S. Royal dual-stock construction—tough on the outside for longer tread wear, soft on the inside for greater shock absorption.

As a result, the Innacush lasts far longer. And it provides much softer riding for your trucks, loads and drivers. Look at these two illustrations, representing the motion of a truck's axle across a rough surface. The jagged line on top shows how an ordinary tire *conducts* shocks. The smooth line below shows how the U. S. Royal Innacush *sponges* shocks away.



You can get the Innacush in 2 types—the regular pressed-on version or the new Demountable Innacush which can be changed in 10 minutes, avoiding expensive pressing and downtime. Either one will bring down *your* cost-per-hour!

U.S. ROYAL

INNACUSH the original cushion solid

US RUBBER

For further information, write Industrial Tire Dept.
UNITED STATES RUBBER COMPANY
ROCKEFELLER CENTER, NEW YORK 20, N. Y.

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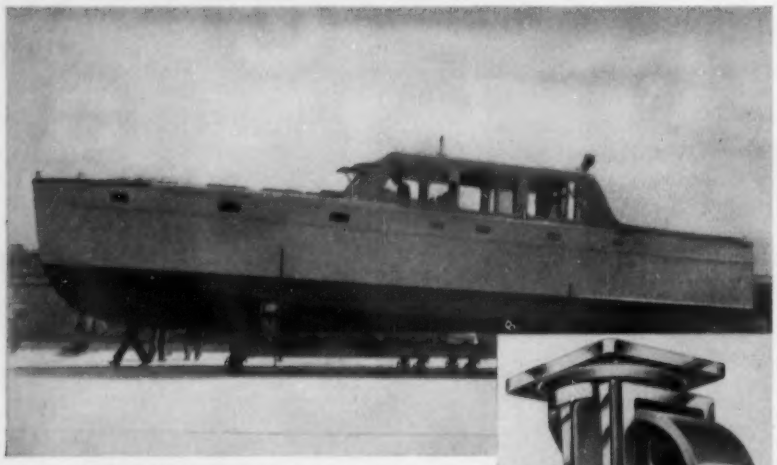
MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Bassick casters handle up to 5 tons each

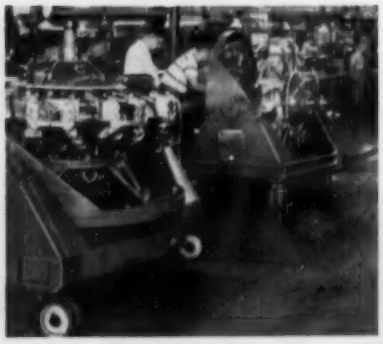


Designed for super heavy-duty

The strongest casters yet built, these big Bassicks are used in moving the heavy loads with safety—anything from boats to bombers—any load up to 10,000 pounds per caster.

Standing up under these enormous loads is only part of the job for these Bassick big boys. With the finest heavy-duty precision bearings, they move and swivel under their five-ton burdens easily, take shocks without a whimper.

Production rolls

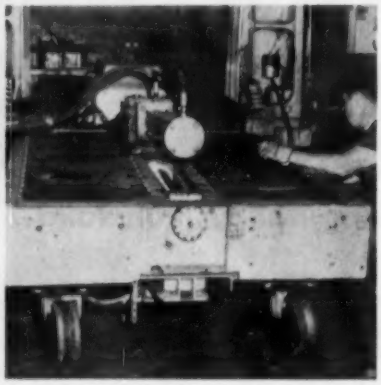


Engine stands on casters

Easy-rolling double wheel Bassick Casters on these roll-over engine build-up stands speed production in the final assembly area at this Stratford, Connecticut plant of the Lycoming Division of AVCO Manufacturing Corporation.

Machine tools of motion

That's what you'll call these Bassick Super Heavy-Duty Casters when you get a look at their construction features. Top plates and king pins are one-piece steel forgings. Horns and wheels are high-tensile malleable castings accurately machined to close limits. They're available with 8 in. and 10 in. wheels, standard tread or with V-grooves for use on angle track. The photo below shows hydraulic die wagon used by Fairchild Aircraft to handle overweight press dies.



The race isn't always to the swift

The casters on this injured turtle put us in mind of Aesop's old fable about the tortoise and the hare — and modern materials-handling.

The race *isn't* always to the swift. It's reliability that paid off for the tortoise against the hare — and it's reliability that makes Bassicks pay off against lesser casters.

Bassick casters, remember, have earned their keep in thousands of plants . . . on the toughest jobs. They'll help you save space, reduce costs, eliminate heavy physical labor, and increase your plant's capacity.

How your Bassick distributor can help

Make your industrial distributor a part of your materials-handling team. Two jobs he can do for you:

He'll keep the products you need flowing—from his stockroom—swiftly and economically into your plant.

He'll also show you new ways Bassick casters can help solve materials-handling problems. He's up on the latest improvements in equipment design, handling methods, new production concepts.

THE BASSICK COMPANY
Bridgeport 2, Conn.
In Canada:
Belleville, Ont.

Bassick
A DIVISION OF STEWART SW WARNER

MAKING MORE KINDS OF CASTERS . . . MAKING CASTERS DO MORE

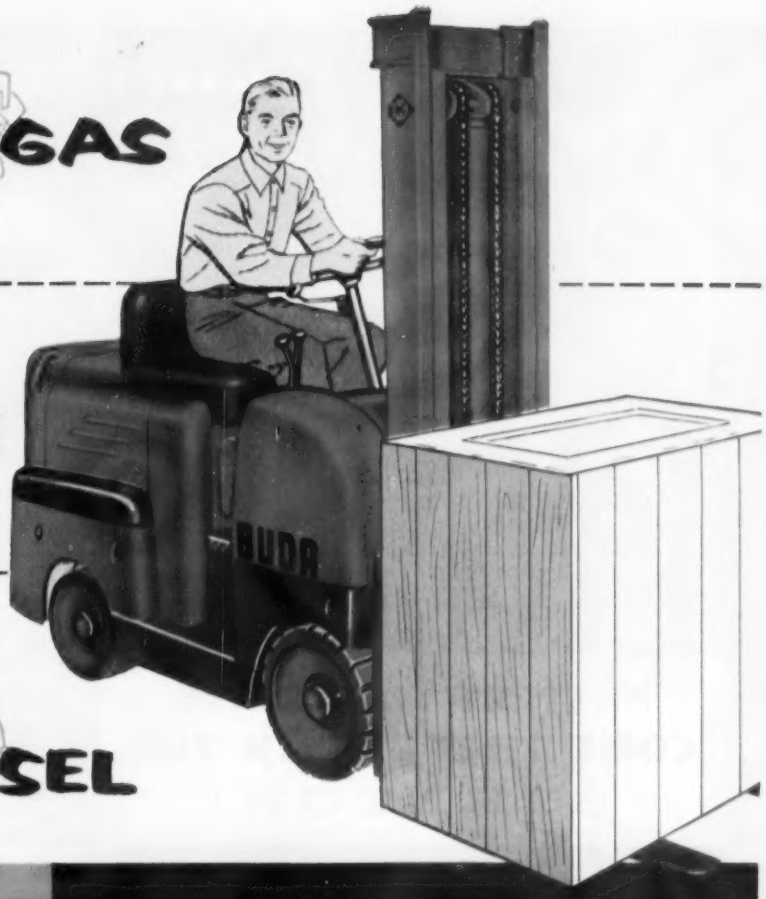
Circle No. 23 on Reader Service Card for more information

MATERIALS FLOW

L.P. GAS

GASOLINE

DIESEL



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(BUDA)

OFFERS YOU A CHOICE OF ENGINES
DIESEL, GASOLINE OR L-P GAS
ALL BUILT BY BUDA

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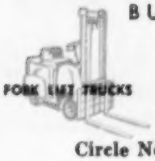
Here's all the information you need in 36 fact-packed pages of lift truck illustrations and statistics. Write for free copy!

Whatever fuel you prefer – Gasoline, Diesel or L. P. Gas – A-C Buda offers you an engine that is built heavier, built stronger, and built for longer, trouble-free service. Only A-C Buda makes its own! This means the engine is specially designed, for the type of fuel to be used, by industrial engine experts for the A-C Buda Fork Lift Truck – designed to do heavy jobs. A-C Buda engines have 85% parts interchangeability, provide 30% longer life, have proven fuel savings of up to $500 a year. So, regardless of fuel – Gasoline, Diesel or L. P. Gas – A-C Buda is a better buy.

ALLIS-CHALMERS MANUFACTURING COMPANY

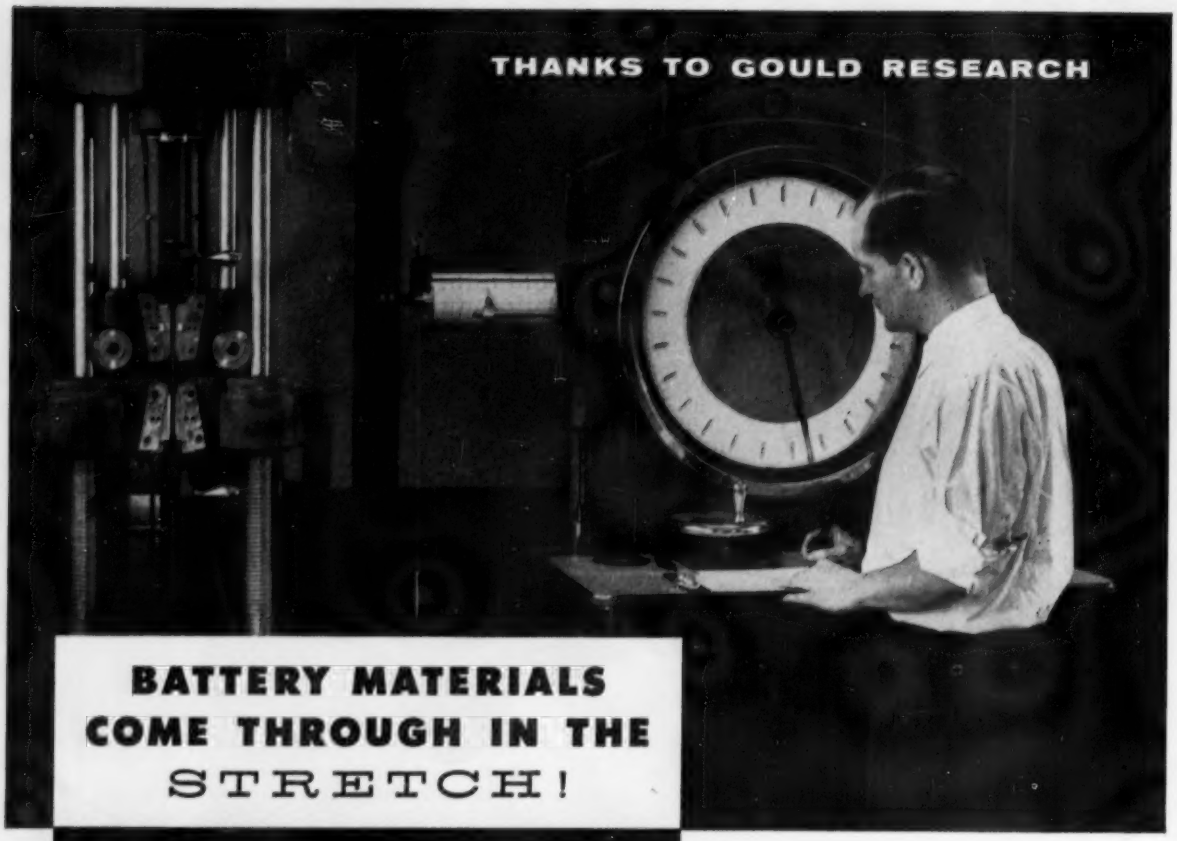
BUDA DIVISION • HARVEY, ILLINOIS


FORK LIFT TRUCKS

INDUSTRIAL TRACTORS

PLATFORM TRUCKS

Circle No. 29 on Reader Service Card for more information



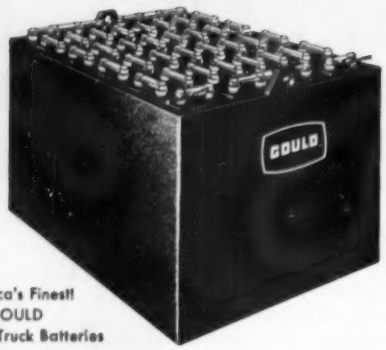
BATTERY MATERIALS COME THROUGH IN THE STRETCH!

BIG REASON WHY YOU GET MORE DURABLE BATTERIES FROM GOULD

Shown above is a tensile strength testing machine in the Gould Battery Research Laboratory at Depew, N.Y. It is capable of exerting a pull of 10,000 pounds on any material. Gould uses it to make sure that every component of a Gould Battery—grids, connectors, posts, jars—has strength and ruggedness far above required standards.

Thanks to this and many other instruments of research, Gould Batteries are capable of delivering better performance under any conditions of service.

For the full story on Gould Research, send for Booklet 749.



America's Finest!
GOULD
Industrial Truck Batteries

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"BETTER BATTERIES THROUGH RESEARCH"

GOULD Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

Circle No. 66 on Reader Service Card for more information

COLSON "IN LINE" TRUCKS

are "BETTER BUILT" for Maintenance-Free Operation ... and Long-Life Performance!

Typical installation at Motor Cargo, Inc., Akron, Ohio

COLSON "IN LINE" TRUCKS have been carefully engineered to assure that all parts are so well balanced in construction that the completed trucks provide years of trouble-free service on all types of conveyor line systems.

Features that insure this remarkable performance include the famous "PressWeld" Series Caster with a ¼" thick plate, formed and welded into a one-piece heavy-duty fork ... truck frames fabricated of heavy 3/16" formed plate bolsters and side sills welded into a sturdy one-piece unit ... and decks of 1" thick, kiln dried selected hardwood, free from knots and blemishes.

COLSON "IN LINE" TRUCKS are available in 3 platform sizes, with 4 types of running gear and 4 types of towing devices for either overhead or sub-floor towing.

Write us or consult your local phone book (under "Trucks: Industrial") for the COLSON office near you.

CASTERS • HAND TRUCKS • LIFT JACK SYSTEMS
HYDRAULIC, ELECTRIC AND MECHANICAL POWER LIFTS
AND TRANSPORTS

THE Colson® CORPORATION
Elyria, Ohio

Circle No. 34 on Reader Service Card for more information

more power **now!**
get at least **10%** more power

with C&D's new 66 and 125 Industrial truck batteries

The proven retention qualities of C&D's famous Five-Fold Slyver-Clad* construction virtually eliminates shedding and needed sediment space is held to a minimum. In the new 66 (HA) and 125 (HB) batteries, C&D utilizes the extra space thus obtained in a standard jar by using the longest, thickest plates in the industry to give: *T.M. Reg.

Extra life! Maximum capacity!

Plus—

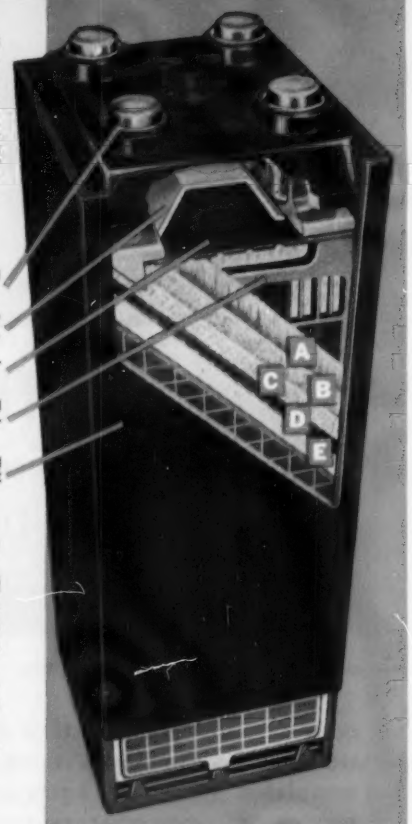
Post corrosion and leakage eliminated by lead bushing in cover.

Easier maintenance provided by new level indicator to prevent overflushing.

Separator breakage prevented by plastic moss shield.

Extra strong plates cast by special process which eliminates flaws, shrinkage, cracks, and dross inclusions.

New jar cover—molded of special hi-impact compound designed to resist breaks and leaks.



This is Slyver-Clad construction.

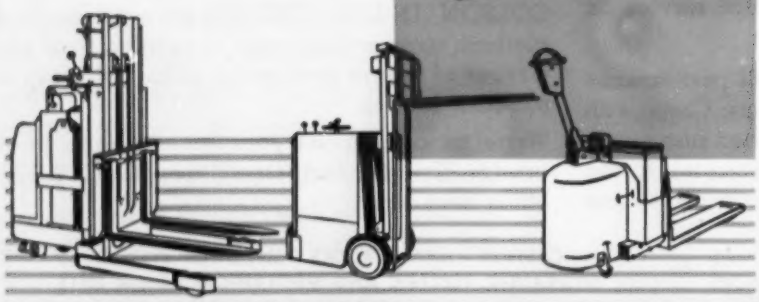
A Slyver; parallel glass fibres to hold active material in place.

B First glass expansion mat—allows normal plate expansion; holds Slyver in place.

C Second glass expansion mat—allows additional normal plate expansion; covers vertical plate edges.

D Perforated Koroseal retainer—completely encases plate, and insulates sides and bottom.

E Microporous rubber or plastic separators—last a lifetime.



C & D BATTERIES

work stronger—longer!

Circle No. 48 on Reader Service Card for more information

news from the SALES FIELD

W. Collins, I. G. King, T. Fitch

Nearly 200 people attended a celebration in Los Angeles recently. Occasion was the 25th anniversary of the founding of **Irving G. King and Company** and the 75th birthday of the firm's founder, **Irving G. King.** Activities of the firm have been guided by Tom Fitch and Wayne Collins, since King's retirement some 12 years ago.

Joe H. Peritz has been named manager of dealer sales of **Lamson Corporation's** "Install-It-Yourself" conveyors. In his new position, he will assist the field operations manager in developing a dealer organization. A veteran of 20 years with Lamson, Peritz served briefly with the material handling branch of the National Production Authority during the Korean war.

Joe H. Peritz

Signode Steel Strapping Company has named **James R. Williams** district sales manager for eight midwestern states. **C. Howard Carlson** succeeds him and assumes the title of assistant advertising and sales promotion manager. **S. E. Heymann** heads the advertising, sales promotion and market research departments.

The Marine and Industrial Engine Division of Chrysler Corporation has established regional offices in Chicago and New York. The Chicago office is located in the 333 North Michigan Avenue Building and

A. G. Cunnings

R. H. Procter

is headed by **R. H. Procter**, former west coast divisional manager. **A. Gordon Cunnings** directs the New York facility, which is located in the Lincoln Building, 60 East 42nd Street.

A new service and installation department has been opened at 2045 Sacramento Street, Los Angeles, by **American Liquid Gas Corporation.**

Two new franchise representatives were recently signed by **Automatic Transportation Company. Stryco Sales, Inc.,** Albuquerque, New Mexico, will handle sales and service of Automatic equipment in the states of Arizona and New Mexico, and El Paso county in Texas. **Kornfeld-Thorp Electric Company,** Kansas City, Missouri, was given a territory comprising Kansas and western Missouri.

Effective May 1, The Rapids-Standard Company, Inc. of California became officially known as **Rapistan of California, Inc.** The firm is located at 444 Brannan Street, San Francisco.

Two new representatives have been appointed by **Barrett-Cravens Company. H. G. Davis Co., Inc.,** 8 St. Mary's

now!

more power than ever

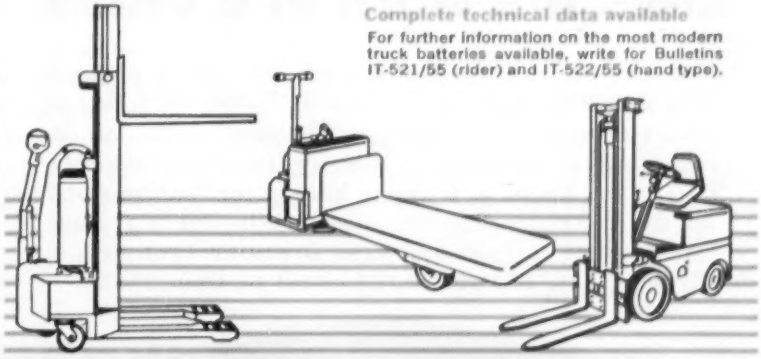
with C&D's new 66 and 125
Industrial truck batteries

Ten years ago C&D pioneered two high capacity batteries—and the users of these batteries today represent a bluebook of American industry.

Now, after continuing research, development and testing, the newest additions to C & D's line of industrial truck batteries, the 66 and 125 are available. Now you can get at least 10% more capacity in standard size trays for your truck. *In truck operation, this means at least a 10% longer duty cycle.* Now, you can put the most modern maximum capacity industrial truck battery on the market today—C & D's Five-Fold Slyver-Clad* to work in your trucks. Remember—C & D Slyver-Clad Batteries move more tons—for longer periods! *T.M. Reg.

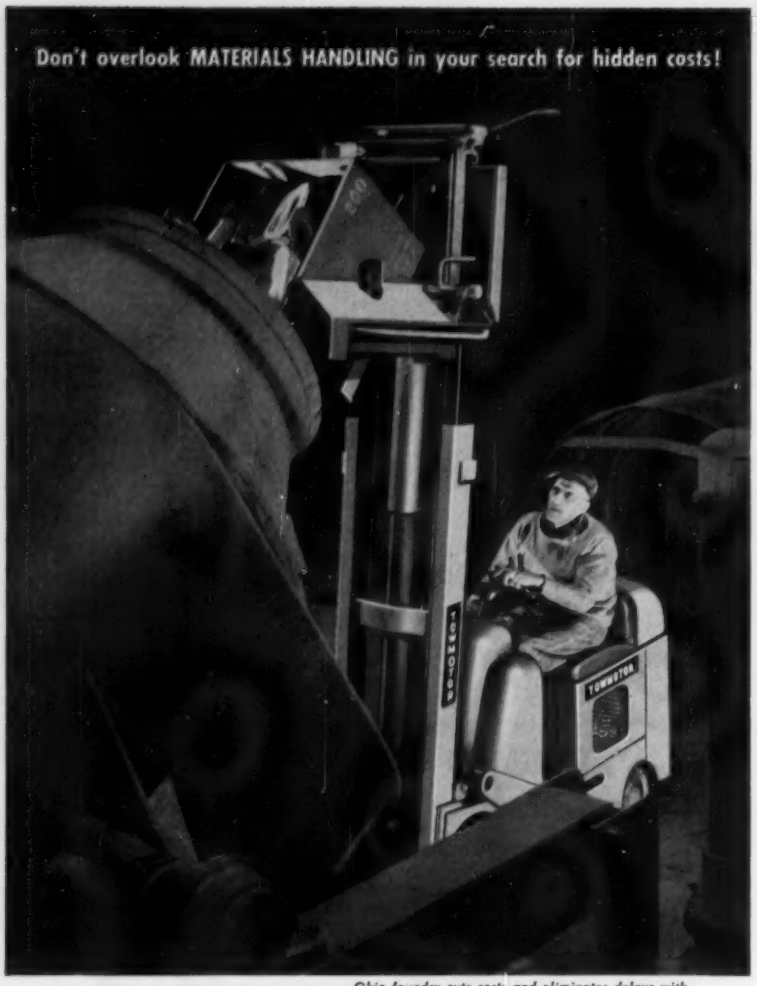
Complete technical data available

For further information on the most modern truck batteries available, write for Bulletins IT-521/55 (rider) and IT-522/55 (hand type).



C&D BATTERIES, INC.
of Conshohocken, Pa.
Industrial Batteries Since 1906
Sales and Service Offices in Principal Cities from Coast to Coast

Circle No. 40 on Reader Service card for more information



Ohio foundry cuts costs and eliminates delays with Towmotor Fork Lift Trucks equipped with scoop accessories.

WITH TOWMOTOR...ONE MAN does the work of a CREW

Stiff competition demands that every cost leak be plugged. *Mass Handling* materials faster with Towmotor Fork Lift Trucks reduces product damage, eliminates production delays, speeds all operations in receiving, processing, assembly, storage and shipping. If you're looking for *"hidden costs"* ask the Towmotor Representative to help you re-appraise your handling operations, or write TOWMOTOR CORPORATION, Div. 807, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS Since 1919

Manufactured Only by Towmotor Corporation—The Pioneer Maker of Fork Lift Trucks

Circle No. 149 on Reader Service Card for more information

Street, Boston, Mass., will cover all of New England with the exception of western Massachusetts. The Rochester, New York area will be covered by **J. L. Choice Company,** 206 Cutler Bldg., Rochester.

Recently named as Chicago district sales manager of **The Chas. Wm. Doepke Mfg. Co., Inc.** was **R. D. Jones.** A graduate of Dartmouth College, Jones has just completed an executive program course at the University of Chicago. He was associated with Lewis-Shepard Products, Inc. for a number of years, and has a broad knowledge of the material handling industry. Doepke's Chicago offices are located at 8 South Michigan Avenue.

R. D. Jones

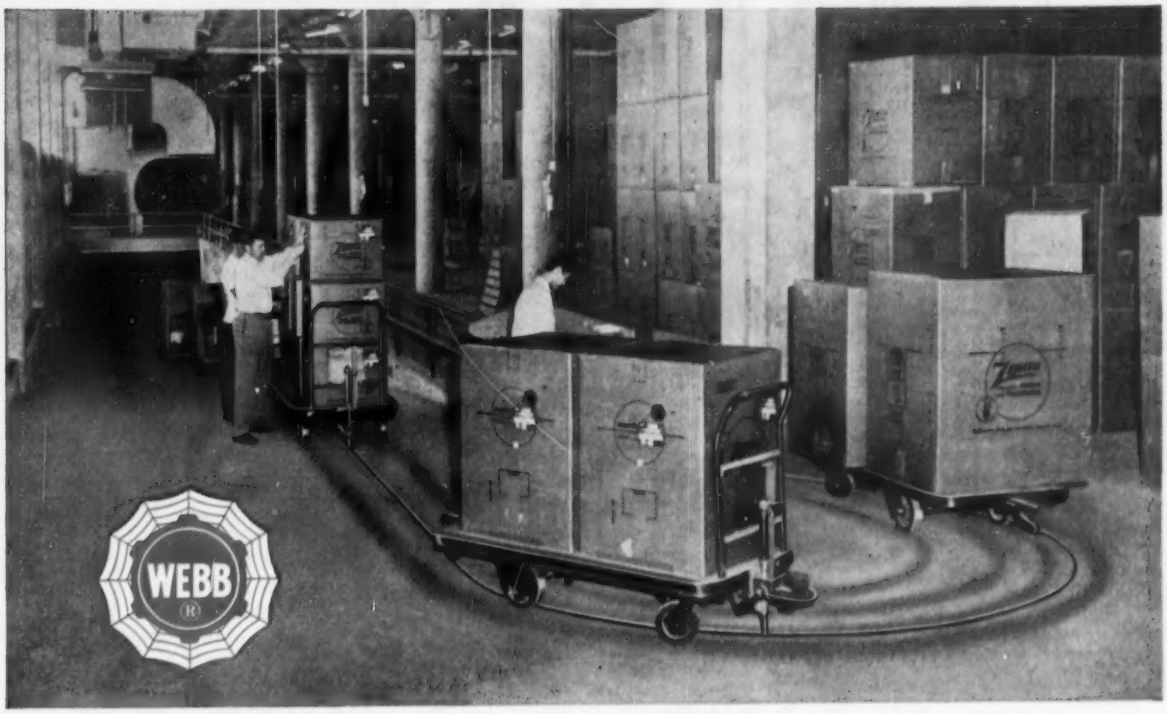
The west coast division of **Globe Hoist Company, Globe Pacific Hoist Company,** Long Beach, California, began operations in May. Vice President **John R. Queen** heads the new facility.

Baldwin - Lima - Hamilton Corporation, Construction Equipment Division, has appointed two new distributors. They are: **Hawkeye Machinery Co., Inc.,** 1225 Walnut Street, Des Moines, Iowa; and **Bert Smith Road Machinery Co., Inc.,** 321 West Chestnut Street, Enid, Oklahoma.

Equipment For Industry, 1265 Atlantic Avenue, Brooklyn, New York, is the new exclusive distributor for **Whiting Corporation** in the New York, Nassau and Suffolk trading areas.

JERVIS B. WEBB

CONVEYOR ENGINEERING, MANUFACTURE, INSTALLATION and AUTOMATION



A TOWVEYOR THAT RUNS FROM FLOOR TO FLOOR?

Yes, for the first time, here is a Towveyor installation that also travels up and down concrete ramps, providing a smooth and constant flow of materials between floors. This modern Towveyor installation is the backbone of materials handling in this huge plant. Nearly 4,000 feet of Towveyor track winds its way through the various departments, bringing cabinets and other materials in, and removing finished TV sets to storage or shipping.

The Towveyor system consists of a motor driven endless chain that travels in a trough in the floor. Material is carried on 750 tow trucks. Each truck is equipped with a tow pin which is manually lowered into a narrow continuous slot in the floor to engage the Towveyor chain. Trucks are disengaged from chain by raising tow pin. Tow pin is spring locked in the up position and locked in a slot in the down position for positive safety on both flat and ramp travel of tow trucks.

This efficient Towveyor system provides faster and better regulated flow of cabinets from receiving docks to warehouse. Finished radios and television sets are smoothly moved from final assembly to shipping. Picture tubes, component parts and even corrugated cartons are carried in a carefully coordinated manner to their proper stations. Maximum daily capacity of system is 10,000 cabinets delivered to warehouse and 10,000 finished sets to shipping.

Webb engineering ingenuity and design experience can also provide a better answer to your materials handling problems. Up and down, and all around your plant, Webb conveyors engineered to your specific needs are best.

Visit us at "The Production Engineering Show" — Navy Pier, Chicago • September 6 to 16, 1955 • Booth 518

Write to us on your company letterhead and we will be happy to place your name on the Webb mailing list to receive factual technical information on conveyor installations, case history reports, and new product literature.

JERVIS B. WEBB CO.

Specialists in Custom Conveyor Systems

8935 ALPINE AVENUE • DETROIT 4, MICHIGAN

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Offices and Representatives Throughout The World • FACTORIES: *Detroit* • *Los Angeles* • *Hamilton, Ontario*

Circle No. 162 on Reader Service Card for more information

LITERATURE FEATURED

Storage Racks . . . Catalog from American Metal Products Co. tells how to cut your handling and warehousing costs.

Circle 41 on Reader Service Card

Power Unit . . . The Ready-Power Co. offers information on its new Bantam Model W gas-electric power unit.

Circle 129 on Reader Service Card

Steel Strapping . . . Six basic unitizing methods can mean savings for you, says Signode Steel Strapping Co. in a free catalog on the subject.

Circle 140 on Reader Service Card

Air Hoist . . . Details are offered by The Aro Equipment Corp. on the ARO production air hoist in capacities up to 2000 pounds.

Circle 17 on Reader Service Card

Barrier Rap . . . Samples and test data on Green Core barrier rap are available from Mid-States Gummed Paper Co.

Circle 107 on Reader Service Card

Electric Trucks . . . Data folder may be obtained from Automatic Transportation Co. on Automatic's Earn-Its-Own-Way plan.

Circle 16 on Reader Service Card

Terminal Trucks . . . Full information on Jakes Foundry Co. safe-tow terminal trucks is offered by the manufacturer.

Circle 84 on Reader Service Card

Conveyor . . . Mathews Conveyor Co., in celebrating its 50th anniversary, describes many "show jobs" of the conveying industry.

Circle 102 on Reader Service Card

Stacking Racks . . . Literature published by C. E. Robinson Co. describes the Stak-Pal system of material handling.

Circle 132 on Reader Service Card

Case Sealer . . . Details are available from A-B-C Packaging Machine Corp. on how its short case sealer can save floor space and labor for you.

Circle 46 on Reader Service Card

Stencil Marking . . . Diagraph-Bradley Industries, Inc. offers information on a rapid and economical stencil marking system.

Circle 45 on Reader Service Card

Tote Box Truck . . . Folder F available from Rolock Inc. describes an economical and effortless method of handling tote boxes.

Circle 134 on Reader Service Card

Dumping Hopper . . . Roura Iron Works, Inc. has information on how hand unloading costs can be cut 50 percent or more with its self-dumping hopper.

Circle 136 on Reader Service Card

Electric Walkie Truck . . . Literature published by Revolvator Co. is packed with data on the Go-Getter electric walkie truck.

Circle 130 on Reader Service Card

Framing . . . How you can benefit from Dexion "do-it-yourself" framing is described in literature available from Acme Steel Co.

Circle 47 on Reader Service Card

Car Door Opener . . . Data available from Nolan Co. gives complete details on a one-man car door opener that can reportedly open any box car door in 20 seconds or less.

Circle 117 on Reader Service Card

Skid Boxes . . . Corrugated skid boxes are described by Brummeler Steel Products Corp. in available literature.

Circle 28 on Reader Service Card

Sealer . . . Booklet offered by Derby Sealers, Inc. gives details on the Derby 32-T case sealer.

Circle 31 on Reader Service Card

Gantry Crane . . . Bulletin C-1 offered by American MonoRail Co. illustrates hundreds of successful MonoRail installations.

Circle 10 on Reader Service Card

Protective Packaging . . . Free samples and packaging information are available from American Sisalkraft Corp.

Circle 11 on Reader Service Card

Storage Batteries . . . Bowers Battery & Spark Plug Co. has available details on its batteries which are said to be always better.

Circle 26 on Reader Service Card

Solid Tires . . . Free booklet from Phoenix Manufacturing Co. indicates sizes and load specifications of cured-on solid tires.

Circle 124 on Reader Service Card

Carpet Truck . . . The Easiquip Co. has published a booklet entitled "How You Can Cut Carpet Handling Costs".

Circle 49 on Reader Service Card

Bulk Conveyor . . . An idea book on engineered material handling systems is offered by Gifford-Wood Co.

Circle 60 on Reader Service Card

Shelf Drawers . . . Bay Products Inc. gives details on the Bay adjustable compartment drawer in a recently published catalog.

Circle 32 on Reader Service Card

Shipping Container . . . Ackermann Manufacturing Co. offers details on a new shipping container which is all steel, fully nestable, re-usable, self-palletizing and tierable.

Circle 6 on Reader Service Card

IN THIS MONTH'S ADVERTISEMENTS

Trambeam Details . . . Whiting Corp. offers detailed information on Trambeam installations and points out dollar-wise features of the units.

Circle 180 on Reader Service Card

Winches . . . Catalog 853, available from Stephens-Adamson Mfg. Co., tells about hand and motor winches designed to give dependable lifting-power.

Circle 181 on Reader Service Card

Plastic Tape . . . Ideas on what you can do with plastic tape are contained in free folder available from Minnesota Mining and Mfg. Co.

Circle 182 on Reader Service Card

Heavy Duty Casters . . . How heavy duty casters are working in every type of industry is told by The Bassick Company. Details offered on new ways to improve your handling.

Circle 183 on Reader Service Card

Industrial Sweeper . . . Many sizes of gas and electric industrial sweepers are detailed in a brochure published by G. H. Tennant Co.

Circle 184 on Reader Service Card

Hoists . . . Bulletin offered by Shepard Niles Crane and Hoist Corp. gives facts on Liftabout-Jr. hoists.

Circle 185 on Reader Service Card

LP-Gas Carburetion . . . Factual figures of an LP-Gas test conducted by Douglas Aircraft Co. are offered by American Liquid Gas Corp.

Circle 186 on Reader Service Card

Free Layout Service . . . Equipto Division of Aurora Equipment Co. offers free advice on plant layout.

Circle 187 on Reader Service Card

Electric Walkies . . . Bulletin 54 published by The Moto-Truc Co. points out the maneuverability of Moto-Truc electric walkies, plus other features.

Circle 188 on Reader Service Card

Fork Truck . . . How one man and a fork truck do the work of a crew is told by Towmotor Corp. Company also offers facts on how to re-appraise your handling operations.

Circle 189 on Reader Service Card

Automatic Selection . . . Catalog 953 from Allied Steel and Conveyors, Inc. tells how its conveyor system provides for automatic selection and transfer of any given load.

Circle 190 on Reader Service Card

Battery Data . . . Full story on Gould battery research is contained in booklet 749 published by Gould-National Batteries, Inc.

Circle 191 on Reader Service Card

Positive Protection . . . Thilmany Pulp & Paper Co. tells how you can have positive protection for your product at very little extra cost. Also offers free sample kit of print decorated functional papers.

Circle 192 on Reader Service Card

Metal Conveyor Belts . . . Thirty-two page catalog published by Cyclone Fence Dept., American Steel & Wire Division, shows wide scope of its metal conveyor belts, plus application photos.

Circle 193 on Reader Service Card

Self Dumping Hopper . . . Bulletin E-1a available from Phillips Division, Salem-Brosius, Inc., gives details on rubber tired self dumping hopper designed for speed and convenience when propelled by hand.

Circle 194 on Reader Service Card

Automatic Overload Cut Out . . . Complete information on Anchor-Waldron automatic overload cut out is contained in catalog offered by John Waldron Corp.

Circle 195 on Reader Service Card

Mobile Crane . . . New illustrated bulletin No. 79D from Silent Hoist & Crane Co. gives details on the fluid drive Krane Kar.

Circle 196 on Reader Service Card

Unitized Load Handling . . . Interesting brochure from Mead Board Sales, Inc. tells about Poke-Pak, said to be the ultimate in unitized load handling.

Circle 197 on Reader Service Card

Catalytic Exhaust . . . Booklet available from Oxy-Catalyst, Inc. gives complete information on OCM exhausts for gasoline engines.

Circle 198 on Reader Service Card

Caster Facts . . . Faultless Caster Corp. offers facts on casters engineered to your requirements.

Circle 199 on Reader Service Card

Tractor Shovel . . . Twelve page booklet published by Clark Equipment Co. contains explanation and cutaway drawings of Michigan Power Shovel.

Circle 200 on Reader Service Card

Electric Hoist . . . Story of how Budgit electric hoist can save money for you is contained in bulletin 391 published by Manning, Maxwell & Moore, Inc.

Circle 201 on Reader Service Card

Electric Fork Truck . . . Barrett-Cravens Co. thinks you'll want catalog 5210 as it contains complete aisle-saver information. Tells how to solve cramped storage space problems with a fast maneuvering electric fork truck.

Circle 202 on Reader Service Card

Mail this card to FLOW for fast, full information on any *Products* shown in this issue, the *Latest Technical Information*, and *Manufacturers' Catalogs* and *Specifications*.

PLEASE PRINT — JULY, 1955. Do not use after 10-15-55

Name ..... Position .....

Company ..... Kind of Business .....

Street .....

City ..... Zone..... State.....

PLEASE SEND ME ADDITIONAL INFORMATION AND LITERATURE ON ITEMS CIRCLED BELOW.

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2	19	36	53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325
3	20	37	54	71	88	105	122	139	156	173	190	207	224	241	258	275	292	309	326
4	21	38	55	72	89	106	123	140	157	174	191	208	225	242	259	276	293	310	327
5	22	39	56	73	90	107	124	141	158	175	192	209	226	243	260	277	294	311	328
6	23	40	57	74	91	108	125	142	159	176	193	210	227	244	261	278	295	312	329
7	24	41	58	75	92	109	126	143	160	177	194	211	228	245	262	279	296	313	330
8	25	42	59	76	93	110	127	144	161	178	195	212	229	246	263	280	297	314	331
9	26	43	60	77	94	111	128	145	162	179	196	213	230	247	264	281	298	315	332
10	27	44	61	78	95	112	129	146	163	180	197	214	231	248	265	282	299	316	333
11	28	45	62	79	96	113	130	147	164	181	198	215	232	249	266	283	300	317	334
12	29	46	63	80	97	114	131	148	165	182	199	216	233	250	267	284	301	318	335
13	30	47	64	81	98	115	132	149	166	183	200	217	234	251	268	285	302	319	336
14	31	48	65	82	99	116	133	150	167	184	201	218	235	252	269	286	303	320	337
15	32	49	66	83	100	117	134	151	168	185	202	219	236	253	270	287	304	321	338
16	33	50	67	84	101	118	135	152	169	186	203	220	237	254	271	288	305	322	339
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340

FIRST CLASS
PERMIT No. 8066
SEC. 34.9 P. L. & R.
CLEVELAND, OHIO

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

3¢ POSTAGE WILL BE PAID BY: *Reader Service Department*

FLOW

1240 ONTARIO STREET • CLEVELAND 13, OHIO

Mail this card to FLOW for fast, full information on any *Products* shown in this issue, the *Latest Technical Information*, and *Manufacturers' Catalogs* and *Specifications*.

FIRST CLASS
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FLOW

1240 ONTARIO STREET • CLEVELAND 13, OHIO

PLEASE PRINT — JULY, 1955. Do not use after 10-15-55

Name ..... Position .....

Company ..... Kind of Business .....

Street .....

City ..... Zone..... State.....

PLEASE SEND ME ADDITIONAL INFORMATION AND LITERATURE ON ITEMS CIRCLED BELOW.

1	18	35	52	69	86	103	120	137	154	171	188	205	222	239	256	273	290	307	324
2	19	36	53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325
3	20	37	54	71	88	105	122	139	156	173	190	207	224	241	258	275	292	309	326
4	21	38	55	72	89	106	123	140	157	174	191	208	225	242	259	276	293	310	327
5	22	39	56	73	90	107	124	141	158	175	192	209	226	243	260	277	294	311	328
6	23	40	57	74	91	108	125	142	159	176	193	210	227	244	261	278	295	312	329
7	24	41	58	75	92	109	126	143	160	177	194	211	228	245	262	279	296	313	330
8	25	42	59	76	93	110	127	144	161	178	195	212	229	246	263	280	297	314	331
9	26	43	60	77	94	111	128	145	162	179	196	213	230	247	264	281	298	315	332
10	27	44	61	78	95	112	129	146	163	180	197	214	231	248	265	282	299	316	333
11	28	45	62	79	96	113	130	147	164	181	198	215	232	249	266	283	300	317	334
12	29	46	63	80	97	114	131	148	165	182	199	216	233	250	267	284	301	318	335
13	30	47	64	81	98	115	132	149	166	183	200	217	234	251	268	285	302	319	336
14	31	48	65	82	99	116	133	150	167	184	201	218	235	252	269	286	303	320	337
15	32	49	66	83	100	117	134	151	168	185	202	219	236	253	270	287	304	321	338
16	33	50	67	84	101	118	135	152	169	186	203	220	237	254	271	288	305	322	339
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340

LITERATURE IN ADS

Continued

Front End Loader . . . Baker-Raulang Co. gives information on how you can save up to $400 on the initial cost of a front end loader through the purchase of Baker's Shoveloader.
Circle 18 on Reader Service Card

Industrial Lifts . . . Free booklet on material handling available from The Wayne Pump Co. Tells how you can save time and money.
Circle 161 on Reader Service Card

Industrial Tires . . . U. S. Rubber Co. has available information on two types of Innacush industrial tires—the regular pressed-on version and the new demountable type.
Circle 153 on Reader Service Card

Electric Hoists . . . Yale & Towne Manufacturing Co. offers information on electric hoists in capacities from ¼- to 15-tons.
Circle 168 on Reader Service Card

Packaging Info . . . Hinde & Dauch would like to send you information on how its products can furnish protection to yours.
Circle 75 on Reader Service Card

Steel Strapping . . . Allegheny Steelband Company will analyze your shipping problems free and offer a suggestion on Steelband strapping.
Circle 8 on Reader Service Card

Flat Top Conveyor . . . Illustrated catalog published by M-H Standard Co. suggests many uses for Armorbelt flat top Metalbelt conveyor.
Circle 95 on Reader Service Card

Chain Hoist . . . Wright Hoist Division, American Chain & Cable Co., has published bulletin DH-504 containing complete information on its electric roller chain hoist.
Circle 9 on Reader Service Card

Hoist Data . . . Bulletin 890 available from Robbins & Myers Inc. gives up-to-date data on hoists.
Circle 133 on Reader Service Card

Solid Tires . . . If economy is your goal, The Monarch Rubber Co. would like to send you information on how its industrial solid tires can save you money.
Circle 109 on Reader Service Card

Walkie Power Trucks . . . Catalogs 551-1-2-3 prepared by Barrett-Cravens Co. give complete details on Barrett walkie power trucks for loads up to 6000 pounds.
Circle 21 on Reader Service Card

Hydraulic Table . . . Bulletin from Lange-Lift Company tells about a hydraulic work-height feed table with vertical height up to 45 inches.
Circle 90 on Reader Service Card

Shelving and Bins . . . Frick-Gallagher Mfg. Co., Inc. has prepared a booklet which tells how to double your warehouse capacity. It's free on request.
Circle 57 on Reader Service Card

Hoist Suspension Details . . . Meteor catalog 142 from Chisholm-Moore Hoist Division shows details of hoist suspension, operation and construction.
Circle 170 on Reader Service Card

Hydraulic Lift . . . Booklet published by Globe Hoist Co. tells how many industrial firms are using Globe Oilifts to speed lifting work and cut costs.
Circle 62 on Reader Service Card

Conveyors . . . Factual technical information on conveyor installations, case history reports and new product literature is offered by Jervis B. Webb Co.
Circle 162 on Reader Service Card

Industrial Doors . . . Catalog A-37 published by Richards-Wilcox Mfg. Co. tells how you can profit with R-W automatic electrical industrial door operators in your plant.
Circle 131 on Reader Service Card

Conveyors . . . Power belt and gravity conveyors are discussed by A. B. Farquhar Division, The Oliver Corp., in bulletins 400 and 401.
Circle 55 on Reader Service Card

Tire Guidebook . . . B. F. Goodrich Co. offers free a copy of its "Industrial Tire Guidebook".
Circle 63 on Reader Service Card

Skid Truck . . . Fully illustrated bulletin HST-19 available from Ironbound Box & Lumber Co. details hydraulic skid trucks for loads up to 1000 pounds.
Circle 182 on Reader Service Card

Wheelbarrow . . . Catalog available from Sterling Wheelbarrow Co. gives information on how wheelbarrows can be profitably used to haul coal, scrap, chips, turnings or similar heavy materials.
Circle 144 on Reader Service Card

Tote Box . . . Bulletin 435 from Molded Fiberglass Tray Co. tells about a light and strong fiberglass tote box.
Circle 110 on Reader Service Card

Telescopic Conveyor . . . Literature from Wilkie Company tells how loading and unloading can be accomplished faster, smoother and easier with Wilkie telescopic conveyors.
Circle 167 on Reader Service Card

Label and Marking Systems . . . Free file-folder kit from Weber Addressing Machine Co. tells how to modernize your shipping operations.
Circle 163 on Reader Service Card

Fork Trucks . . . Literature from Mercury Manufacturing Co. illustrates and describes Mercury fork trucks.

Circle 104 on Reader Service Card

Truck Leveler . . . Complete data on the Rotary truck leveler is contained in catalog published by Rotary Lift Co.

Circle 135 on Reader Service Card

Clutchless Drive . . . Data from Clark Equipment Co. tells about clutchless Hydratork drive, said to give better maneuverability and less driver fatigue.

Circle 35 on Reader Service Card

Reinforced Tape . . . Free sample roll and complete data on bi-directionally reinforced tape may be obtained from Mid-States Gummed Paper Co.

Circle 93 on Reader Service Card

FG Fork Truck . . . Specific bulletins on the Baker FG gas fork truck are offered by The Baker-Raulang Co. Truck capacities range from 3000 to 6000 pounds.

Circle 19 on Reader Service Card

Hoists . . . Complete information on reconnectable P & H hoists with safe 24-volt control circuits is available from Harnischfeger Corp.

Circle 73 on Reader Service Card

Electric Pallet Truck . . . Catalog 35C from Lewis-Shepard Products Inc. gives details on the new L-S Jacklift electric pallet truck.

Circle 91 on Reader Service Card

Hand Stamp . . . Literature and free sample form-cut stencil and print are offered by The Multistamp Co.

Circle 113 on Reader Service Card

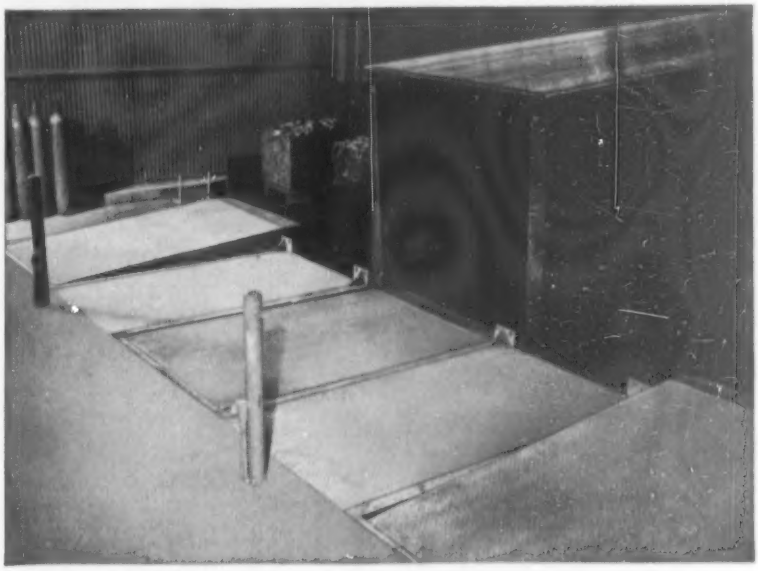
Conveyor Systems . . . Details of complete conveyor systems are contained in brochure published by The E. W. Buschman Co.

Circle 30 on Reader Service Card

Tape Machine . . . Lipton Manufacturing Co. offers literature on automatic tape dispensing machines.

Circle 92 on Reader Service Card

MODERN HI-LO® AUTOMATIC DOCKBOARDS SPEED HANDLING AT PACKARD-UTICA ENGINE PLANT



HI-LO PROVIDES 5 TIME-AND-MONEY SAVING ADVANTAGES!

1 Eliminates dock attendant

2 Eliminates electrical, hydraulic and related equipment

3 Eliminates costly specialized maintenance

4 Provides matchless safety

5 Low in cost—practically eliminates operating costs

At Studebaker-Packard's new engine plant, speed, efficiency, reduced costs and safety on the loading docks are vitally important.

The Hi-Lo Dockboard installation shown at the plant meets every requirement. Using an exclusive *lever and counterweight principle*, the backing truck *automatically* lowers the ramp into position. Operations can begin *immediately*—no dangerous man-handling of portable boards or manual adjustments of handles, valves or buttons. Exclusive Hi-Lo Tilt Adjuster maintains even lip contact with truck bed for easy, safe materials handling. Hi-Lo automatically rises ready for the next operation when the truck leaves the dock.

When in cross traffic position, Hi-Lo Dockboards are supported by *two* wide-spaced structural steel beams—carry 100% of rated capacity in *any* direction!

New Folder D-155 gives you detailed information—shows why Hi-Lo Dockboards cost *less* to buy, *less* to install, *less* to maintain—yet give you greater efficiency and performance than others costing more than twice as much! Write today!

HI-LO®

Automatic

DOCKBOARDS

Manufactured by

KELLEY COMPANY, INC.

Formerly Dockboards Incorporated

316 E. SILVER SPRING DRIVE, MILWAUKEE 17, WIS.

DISTRIBUTOR INQUIRIES INVITED

KELLEY COMPANY, INC.
316 E. Silver Spring Dr., Milwaukee 17, Wis.

Gentlemen:
Rush Folder D-155-MF describing Hi-Lo Automatic Dockboards.

Company Name_____

Name & Title_____

Address_____

City_____ Zone____ State____

Circle No. 86 on Reader Service Card for more information

The Sand Viper, desert dweller of North Africa, hides from his enemies by the precise movement of certain muscles that causes his entire body to submerge in the sand.

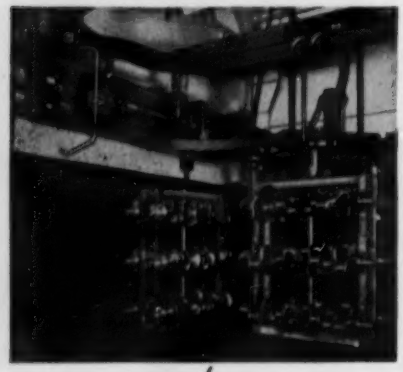
Specializing in CONTROLLED motion

By "controlled" movement we mean that it is possible for you to schedule the flow of materials to coincide with your production machine capacities . . . *automatically,* and with split-second precision.

The science of automatic handling and transferring of materials goes by the name of *automation.* The equipment designed to do all this often goes by the name of *Allied.* For automation is *Allied's* business!

Some of the technological progress important to industry today was brought about by *Allied* know-how. *Allied's* staff of automation experts is fully qualified to eliminate the production bottle-necks in your business too!

PIONEERS IN AUTOMATION . . . *the design and fabrication of fully automatic material handling systems.*



This Allied Conveyor System provides for automatic selection of any given load on a main line conveyor, transferring it to auxiliary lines for intermediate production steps—then automatically back to the main conveyor.

For further information ask for Allied Catalog 953

ALLIED AUTOMATION DIVISION

ALLIED STEEL and CONVEYORS, INC. • 17317 Healy Avenue, Detroit 12, Michigan

Circle No. 2 on Reader Service Card for more information

AD LITERATURE

Continued

Tow Trucks . . . "In-line" trucks are described by The Colson Corporation in recently published literature. The trucks are especially designed for towing by conveyor.

Circle 34 on Reader Service Card

Bulk Handler . . . Brooks Equipment & Mfg. Co. describes the Load Lugger for bulk handling. The truck picks up, hauls, dumps and puts down.

Circle 27 on Reader Service Card

Lightweight Conveyor . . . New London Engineering Co. offers information on its aluminum portable conveyor for boxes, bags, bundles or bales.

Circle 115 on Reader Service Card

Lever-Dollies . . . Complete descriptive circular from Micron, Inc. tells how to move more for less.

Circle 106 on Reader Service Card

Floor Trucks . . . Literature from Towsley Trucks, Inc. describes general and special floor trucks.

Circle 151 on Reader Service Card

Automatic Marker . . . Descriptive literature available from Adolph Gottscho, Inc. explains automatic marking of four sides of cases in a single pass.

Circle 65 on Reader Service Card

Truck Batteries . . . Information on what are said to be the most modern truck batteries available is contained in bulletins available from C & D Batteries, Inc.

Circle 40 on Reader Service Card

Grabs . . . Details on automatic, motorized and manual grabs is offered by Mansaver Industries, Inc.

Circle 99 on Reader Service Card

Packaging Material . . . Helpful booklet published by Nichols Paper Products Company tells how to protect products from costly scratches at less cost.

Circle 116 on Reader Service Card

FLOW

Circle No. 9 on Reader Service Card →

ACCO products

The WRIGHT Hoist for the Job... Helps Build Production Profits

PURCHASE of WRIGHT Speedway Hoists means more than the cost **PRICE**. It means that you have the very best in plant lift equipment **PLUS** the longest-lived, hardest working hoists with a minimum of **MAINTENANCE** requirements. Production men find them more than the **EQUALS** of any hoists with their easy, smooth-running performance. Their **TOTAL** maintenance is so small and service so easy that "down time" **COST** is hardly considered in plants equipped with WRIGHT Speedway Hoists.

Write our York, Pa. office for any or all of these fully informative bulletins—
Bulletin DH-133B on Frame 1 and 1½ WRIGHT Speedways
Catalog E-54A on Frame 2 and 3 WRIGHT Speedways
Bulletin DH-504 on WRIGHT Electric Roller Chain Hoist

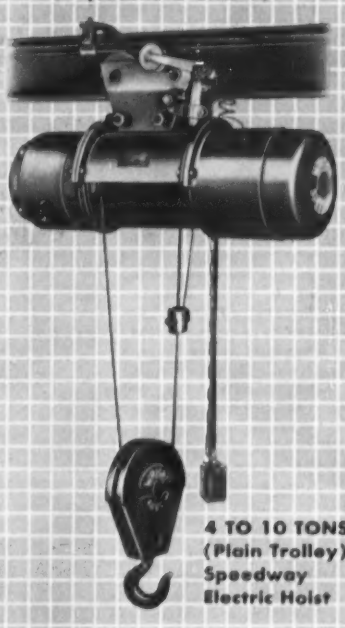
ACCO

Wright Hoist Division
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

Hoists Trolleys Cranes

THE HOIST FOR THE JOB
(Frame 2 and 3)

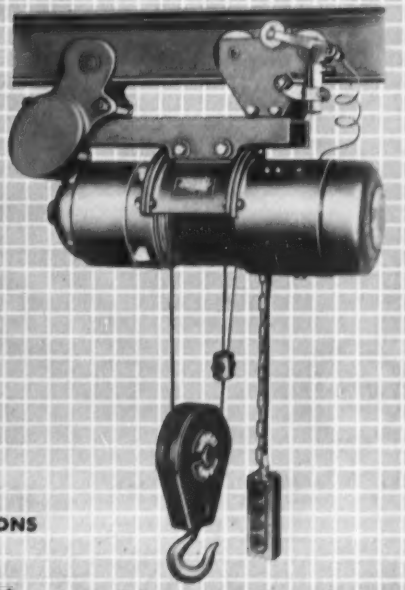


4 TO 10 TONS—(Plain Trolley) Speedway Electric Hoist

¼ TO 2 TONS WRIGHT Electric Roller Chain Hoist

¼ TO 1 TON Speedway Frame 1 Electric Hoist

1½ TO 2 TONS Speedway Frame 1½ Electric Hoist

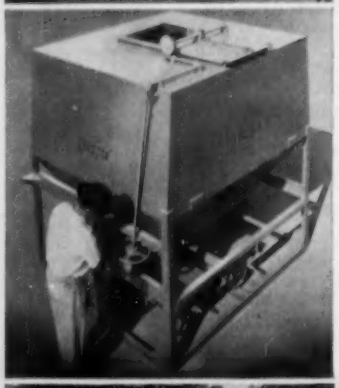


½ TO 6 TONS (Motor Driven Trolley) Speedway Electric Hoist

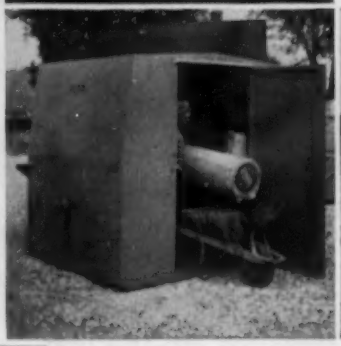
Briefly, this ad illustrates why DEMPSTER-DUMPSTER SYSTEM

Container at right has cast iron bottom and inside walls are lined with fire brick. It handles hot skim off aluminum.

This Tilt Type Container was the result of a cost-cutting idea whereby a high temperature dusty product would be handled by a plant's Dempster-Dumpster. Container has cooling fins, counter-balanced hinged lid with 3-way locking device, 16" sliding gate valve and two sight-glass inspection openings.



Here is a Hopper Type Container with a top door for filling and two bottom discharge doors operated by rack and pinion. Another case where the Dempster-Dumpster System was applied to an additional problem to further reduce costs.



Container at right is just one of several different types we have designed to handle equipment, materials, packages, parcels, etc.

IN A NORMAL INSTALLATION the Dempster-Dumpster System is purchased by a plant because of its proved record for handling bulk materials at tremendous savings. This normal installation usually includes one truck mounted Dempster-Dumpster and any number of standard containers designed to meet the various requirements within the plant. In some cases, containers number 40 to 50. These containers can range in capacity up to 21 cu. yds., with all containers served by the one Dempster-Dumpster.

In the great majority of cases this basic installation is just a starter. Management men, constantly looking for lower operating costs, find numerous and amazing extra savings in the Dempster-Dumpster System. Once in service, transporting developments of every description come to light that supplement the original functions of the equipment. Your own men find easier, quicker and additional cost saving ideas for its use. Many even overshadow the original savings and the equipment becomes more and more indispensable.

Look over just a few of the "Special" containers illustrated in this ad. They are all the result of rough ideas that originated with the men in plants after a basic installation, then developed by our engineers. All ideas were stimulated by the powerful Dempster-Dumpster and its flexibility in picking up, hauling, setting down or dumping anything that needs transporting, at lower cost.

One man, the driver, and a few simple hydraulic controls in the cab of a Dempster-Dumpster, will become indispensable in your plant. It is just that in hundreds of plants of every description throughout the nation. Let one of our representatives give you details of installations. Manufactured exclusively by Dempster Brothers, Inc.

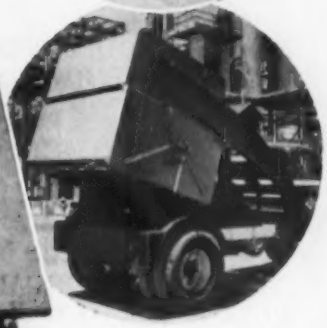
Above container is built with cast iron liner. The holes in outer wall are for cooling.

Here is one of several special drop bottom type containers equipped with couplers and ball bearing trucks for operation in train on rails.

THE DEMPSTER DUMPSTER SYSTEM

DEMPSTER BROTHERS

so many plants find the indispensable...



Two photos above show how all containers, regardless of design, are picked up and hauled. At destination materials are dumped from drop bottom containers as shown at left . . . from Tilt and Skip Type Containers by tilting. Any load, of course, may be set down intact.

This is a special adaptation whereby waste zinc slurry is pumped into two containers, which serve as settling tanks, enabling majority of the water to be decanted before sludge is transported and dumped at waste basin.

Tank Type Containers are available with or without casters in steel, aluminum, stainless steel, etc. Capacity ranges up to 1,200 gal. They may be lined with rubber, lead, highly resistance coatings, etc.

This is a master container with three 2 cu. yd. insert containers. Each insert container is provided with casters, counter-balanced spring-hinged lid for loading and dumping.

675 Shea Bldg., Knoxville 17, Tenn.

NEWS VIEWS TRENDS

SIGNODE BUYS PALLET RIGHTS

Expendable fibreboard pallets will be manufactured by Signode Steel Strapping Company, as a result of the firm's recent acquisition of patents and licensing agreements of the Addison-Semmes Corporation, Racine, Wisconsin. Ray E. Frase, Addison-Semmes vice president, will act as a consultant with Signode on sales and technical matters. The new products will be known as Signode Addison-Semmes Pallets.

AMERICAN PULLEY CO. TO MAKE LIFT TRUCKS

The American Pulley Company, through purchase of the assets of Safeway Industrial Equipment Corporation, has widened its market to include a complete line of manually and electrically operated hydraulic lift trucks. It is planned to merchandise the lift trucks under the trade name of "American Safeway", through American Pulley distributors. Former president of Safeway, Harry T. Carroll, has joined the purchasing company and will operate out of Chicago, where stocks will continue to be maintained. Manufacturing and engineering will be transferred to Philadelphia.

NEW WEBB OFFICE

Closer integration of all company activities was achieved by Jervis B. Webb Company of California recently when a new 5000 square foot office area was completed and occupied. Manufacturing, sales, engineering, purchasing and other procedures are now housed under one roof at 9301 Rayo Avenue, South Gate, California.

EXIDE EXPANDS RESEARCH WORK

Research activities of The Electric Storage Battery Company are being conducted in a new center located in Northeast Philadelphia. Under the direction of Dr. L. E. Lighton, vice president in charge of engineering since 1945, the new research division will work toward improvement of present lines and methods, and do basic research on future requirements for storage battery power.

MILLION $ PLANT

Construction of a million dollar converting plant is underway by Inland Container Corporation. The plant site is Krannert, Georgia, ten miles west of Rome and adjacent to Rome Kraft Company. When completed in September, the building will provide facilities for the manufacture of corrugated boxes from kraft container-board produced at the Rome Kraft Mill. Inland, under the guidance of H. C. Krannert, chairman of the board, pioneered the use of kraft linerboard in the corrugated industry nearly thirty years ago.

CHAIN EXPANDS

Forty-seven acres near Downers Grove, Illinois, were purchased by Chain Belt Company of Milwaukee for the purpose of expanding manufacturing facilities of its Shafer Bearing Division, acquired in 1953. Chain also owns six other plants, located throughout the United States and Canada.

Saves you up to 11⅜" in aisle width

A Master TRUCK

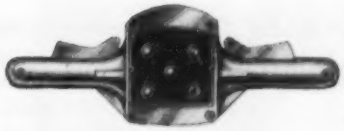
The *ALL-NEW* L-S Electric Pallet Truck for 3-ton loads

Now you can achieve significant savings in costly aisle space with the all-new Lewis-Shepard Jack-Lift Electric Pallet Truck. This new "walkie" offers the shortest headroom (25⅞") of any standard pallet truck . . . handles 48" long pallet loads in aisles only 6 feet wide. And the new JackLift is packed with power . . . handles loads weighing as much as 6000 lbs.

Here are a few of the other standout features of the new L-S JackLift Electric.

- **Exclusive** L-S handle-head controls — traction speeds and brake, forward-reverse, lift and lower, horn and key switch are within finger tip reach.
- **Exclusive** L-S safety braking—brake is on Speed-controller . . . truck operates with handle in any position including vertical.
- **Exclusive** L-S booster rollers — truck rolls into empty or loaded pallets with equal ease . . . eliminates damage to pallet loads.

SEND FOR THE FACTS about the space-saving new L-S JackLift TODAY! Mail the coupon.



COMPARE CONTROLS for convenience, safety. All L-S JackLift controls are in handle-head. Brake operates with handle in any position, including vertical.

COMPARE EASE of pallet entry. L-S JackLift has 5 booster rollers . . . enters pallets smoothly, easily!

LEWIS-SHEPARD

The Master Line

137 Walnut St., Watertown 72, Mass.

Please send Catalog 35C on New L-S JackLift Electric

Name _____ Title _____

Company _____

Address _____

City _____ State _____

Circle No. 91 on Reader Service Card for more information

Continued

C & D BEGINS MIDWEST ACTIVITIES

Manufacturing operations were begun last month in the new Attica, Indiana plant of C & D Batteries, Inc., Conshohocken, Pa. A complete line of industrial storage batteries will be manufactured at the newly leased plant, which is the third in a series of expansion and modernization plans by C & D.

CATERPILLAR PLANS AUSTRALIAN PLANT

Formation of Caterpillar of Australia Pty. Ltd., a wholly-owned subsidiary, makes the third foreign company formed by Caterpillar since 1950. The firm will manufacture and sell many of the regular products now built by the parent company, as well as replacement parts for the entire line of equipment. Construction of a 100,000 square foot building just outside Melbourne will begin at an early date. Mark A. Clements of Peoria has been named managing director of the new subsidiary, and J. Robert Hawk, now in Australia as a Caterpillar representative, will become sales manager.

WICKWIRE IMPROVES BUFFALO OPERATIONS

An improvement program totaling several million dollars is underway at the Wickwire Spencer Division of The Colorado Fuel and Iron Corporation plant in Buffalo. Under the program, Buffalo's open hearth furnaces will be made larger and more efficient, the wire mill will be increased in capacity, and new rolling machinery will go into the rod mill, according to A. F. Franz, president of the Corporation. "The numerous improvements at the Buffalo plant are part of our continuing overall policy of improving operating facilities in the interest of reducing costs and increasing diversification," Franz said.

A LARGER LIMA

The Lima Electric Motor Company is expanding its main manufacturing plant and increasing its production facilities. According to H. E. Reeder, company president, construction is already underway at the Lima, Ohio plant, and is scheduled for completion shortly.

HYGRADE PURCHASED

Canadian International Paper Company has completed arrangements for acquisition of Hygrade Containers Limited, leading Canadian manufacturer of corrugated shipping containers. The Hygrade plant is located in London, Ontario, and will operate as a subsidiary of Canadian Internation.

7% FOR RESEARCH

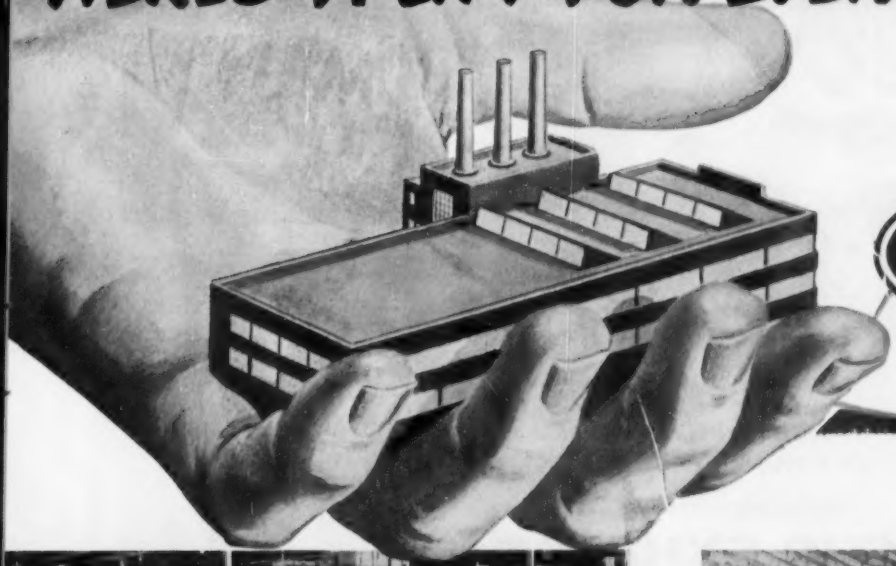
The Packaging Machinery Manufacturers Institute has revealed figures which show that approximately seven cents of every dollar of sales of packaging machinery during 1954 went into research and development for new and better packaging methods. Only the Government supported aircraft industry is believed to exceed this percentage. Shipments of packaging machinery in 1954 exceeded 1953 by nearly 12 percent, according to the report.

SCRIPTEX SELLS OUT

Inventory of Scriptex Adhesive Products Company of Philadelphia was purchased by Paisley Products, Inc., Div. Morningstar, Nicol, Inc., and the entire product line of industrial adhesives transferred to New York City. Al Cohen, former partner and manager of Scriptex, joined the Paisley sales organization.

FLOW
Circle No. 161 on Reader Service Card

HERE'S A LIFT FOR EVERY BUSINESS



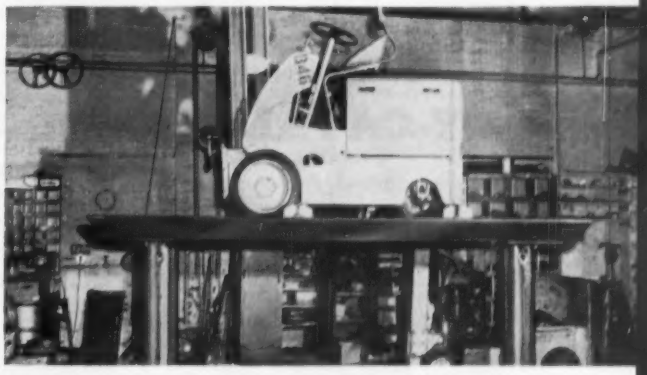
PRODUCTION BOOSTER

Wayne LIFTS

STOP PRODUCTION RUN AROUNDS—Wayne Cross-Over Bridges cut costly run around hauls. Turn miles and hours of wasted travel into productive efficiency. Available in bascule, turn-table or platform type.

CUT HANDLING COSTS by as much as 75% with Wayne Platform Lifts for loading, inventory stocking, feeding of materials to machines, etc. Engineered by LIFTronics to your plant's needs in single or two post types.

LOAD IN HALF THE TIME . . . double the efficiency with Wayne Dock Levelers. Tilt to meet truck bed height at touch of control. Hand or industrial trucks roll smoothly on or off highway truck.



REDUCE MAINTENANCE COSTS with Wayne Industrial Truck Service Lifts.

GET THIS BOOK ON MATERIALS HANDLING . . . FREE

Wayne Industrial Products

AIR COMPRESSORS

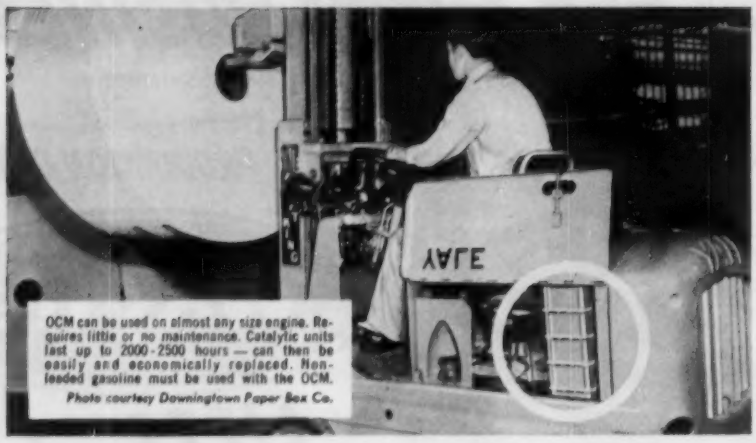
HOSE REELS

LUBRICANT DISPENSERS

INDUSTRIAL PUMPS

INVADER PUMPS

THE WAYNE PUMP COMPANY—*Industrial Division*—FORT WAYNE, INDIANA SALISBURY, MARYLAND • TORONTO, CANADA



OCM can be used on almost any size engine. Requires little or no maintenance. Catalytic units last up to 2000-2500 hours — can then be easily and economically replaced. Non-leaded gasoline must be used with the OCM.
Photo courtesy Downingtown Paper Box Co.

KILLS DANGEROUS CARBON MONOXIDE FROM GASOLINE AND LP-POWERED EQUIPMENT

—Also Eliminates Hydrocarbons—

OCM CATALYTIC EXHAUST

Now you can operate lift trucks, bulk handling trucks, stationary engines — any type of gasoline- or LP gas-powered equipment — efficiently, safely, in even closely confined areas. For the OCM Catalytic Exhaust eliminates 95% or more of the deadly carbon monoxide, and 90% of the hydrocarbons, from the exhaust gases.

The OCM Catalytic Exhaust is made to replace standard engine mufflers. It's now available as optional factory-installed equipment from leading manufacturers, such as Buda, Clark, Yale & Towne, and Lincoln-Schlueter. Or it can be easily installed on present equipment by your own mechanics.

Wherever you operate gasoline- or LP gas-powered engines indoors — even part time — the OCM Catalytic Exhaust means an end to fume-caused headaches, eye irritation, and nausea. It means more efficient use of equipment, plus greater employee productivity and morale. Write now for complete information and the name of your nearest supplier.

FOR FORK TRUCKS

STATIONARY ENGINES

POWER SWEEPERS

OXY-CATALYST, INC.

WAYNE, PA., U.S.A.

MANUFACTURING • ENGINEERING • RESEARCH

Fume elimination processes and equipment for internal combustion engines — for incinerators — for consumer products — and for industrial air pollution control and heat recovery.

For Diesel Exhaust Fumes
New OCM Dieseler reduces below objectionable levels harmful, irritating exhausts from any 4-cycle diesel engine when running at or over 60% load. Write for details.

OXY-CATALYST, INC., Wayne 1, Pa.

Please send complete information on

- ☐ OCM Exhaust for gasoline engines
- ☐ OCM Dieseler for 4-cycle diesel engines
- ☐ Send name of nearest supplier

Name .....

Firm .....

Street .....

City ..... *Zone* ..... *State* .....

Inquirers in the U.S.A. or its territories, or in Canada, should write to Wayne, Pa. Inquirers elsewhere should write to Pan American Chemical Inc., 9 Rue La Perouse, Paris 16, France.

Circle No. 120 on Reader Service Card for more information

MEN in the news

. . . at Automatic Transportation Co.

The post of sales manager has been filled by **William D. Black.** For the past ten years he has been associated with P. W. Voss & Associates, Automatic's Chicago representative. Black succeeds George A. Hinckley who recently became general sales manager of the company.

W. D. Black

. . . at Chrysler Corporation

William A. Martin has succeeded **R. T. Keller** as president of the Marine and Industrial Engine Division. He will also serve as general manager of the company's Trenton, Michigan plant. Keller recently took charge of West Coast Automotive Plant operations.

. . . at Allis-Chalmers Manufacturing Co.

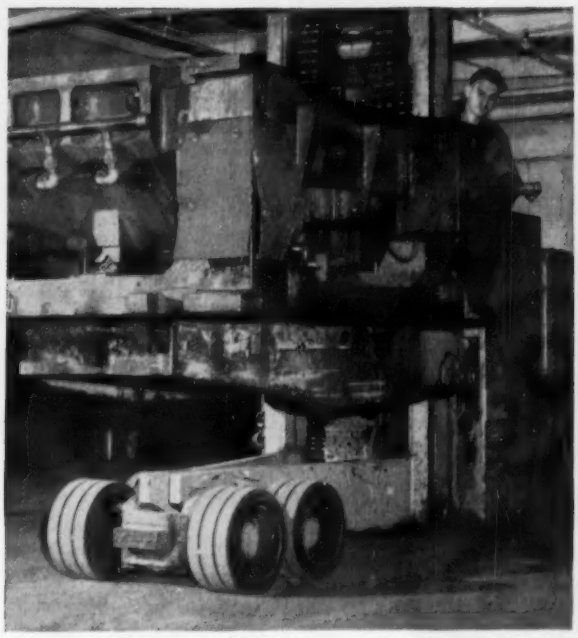
Appointment of **William A. Yost, Jr.** to the newly created post of vice president, staff operations, was announced by President **R. S. Stevenson.** Since 1951, Yost has served as vice president of the general machinery division.

. . . at R. G. LeTourneau, Inc.

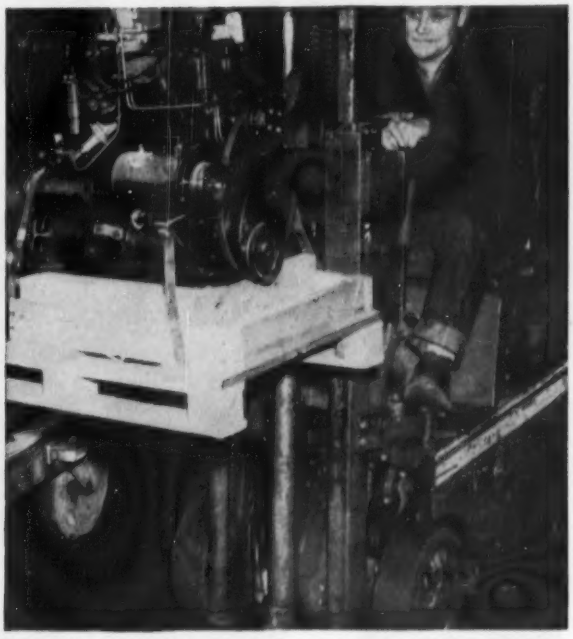
New York University's College of Engineering presented a special citation to Vice President **Richard L. LeTourneau** recently. The citation was for

B.F.Goodrich

TW ANALYSIS lengthens tire service, cuts costs for Willys Motors



Major Mechanic Harold Roberts operates a lift truck carrying a 7-ton Willys door die to the press.



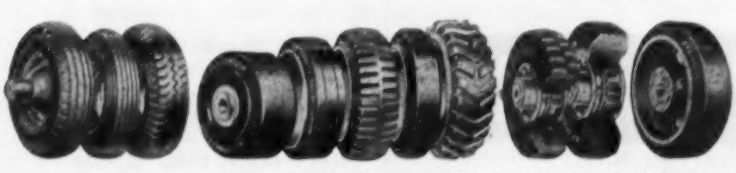
This Willys truck motor heads for the shipping department, driver James Boltz at the wheel. Willys uses nearly 10,000 industrial tires.

OVER 2,000 materials handling units carry dies, motors, parts and the like throughout the vast Willys Motors plant in Toledo, Ohio. Oil and grease attack the industrial tires, railroad tracks bruise them, steel shavings tear at them. Virtually every existing threat to tire life can be found in the Willys complex materials handling set-up.

That's why the company turned to the B. F. Goodrich Tire and Wheel Analysis man. He studied Willys' operations, recommended the right tire types, sizes, tread designs and tread compounds for each of their varied jobs. The result, says Major Mechanic Harold Roberts, is that "these industrial tires give us far longer, trouble-free service—and this saves us money."

Find out how the FREE TW Analysis can save you money

No matter what your materials handling problems are, you can benefit from a FREE B. F. Goodrich Tire and Wheel Analysis. Just call your local B. F. Goodrich retailer or mail the coupon. The TW man will survey your equipment, loads and hauling surfaces. The tire and maintenance recommendations he makes will be *unbiased*, because B. F. Goodrich makes a *complete* line of industrial tires. Act now—let your B. F. Goodrich man show you how to start saving. He may cut your tire costs as much as 50%. A special TW Analysis Plan is available for manufacturers of industrial equipment.



Specify B. F. Goodrich tires when ordering new equipment

The B. F. Goodrich Company
Tire & Equipment Division
Department TW-516, Akron 18, Ohio

Please send me:

- ☐ Additional information on your Tire and Wheel Analysis Plan
- ☐ Free copy of "Industrial Tire Guidebook"
- ☐ Free copy of "How to Get Extra Service out of Solid Industrial Tires"

Name_____

Company_____

Street_____

City_____ Zone____ State_____

Circle No. 63 on Reader Service Card for more information

SHEPARD NILES

LIFTABOUT-JR.

PACE SETTER

on your production line

SHEPARD NILES
LIFTABOUT-JR.

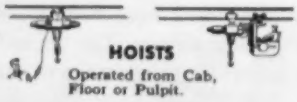
MEN AND MACHINES both produce faster when a Liftabout-Jr. carries the load! Manual lifting and lugging are banished . . . the worker puts the load right where it's wanted with ease. Ideal for "spot" handling or for speeding raw materials and products along your production line.

Shepard Niles Liftabout-Jr. is built to withstand years of use and abuse . . . it's the toughest medium-service hoist money can buy. Available with either rope or push button operation . . .parallel or cross-mounted with bolt, hook or trolley suspension in 250, 500, 1000 or 2000 lb. capacities.

Send for Hoist Bulletin today . . . and request a Shepard Niles representative to call. He'll give you the facts on the complete Liftabout-Jr. line . . . help you select the hoist with the right capacity and controls for your lifting job.

America's Most Complete Line of Cranes and Hoists since 1903

CRANES
Overhead: Top Running, Inner Running, Under Running, Floor or Cab Operated.



HOISTS
Operated from Cab, Floor or Pulpit.

SHEPARD NILES
CRANE AND HOIST CORPORATION

2757 Schuyler Ave., Montour Falls, N.Y.

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MEN IN THE NEWS

Continued

achievement in "the development of electrically propelled and operated heavy machinery for land clearance, logging and general off-road transportation".

. . . at Brainard Steel Division

Sales manager of steel strapping is **Walter A Garrett.** He formerly served as eastern district manager, headquartering in New York City. In his new position Garrett will be responsible for the expansion of sales service for all products of the division including steel strapping, strapping tape and the complete strapping tool line.

W. A. Garrett

. . . at Bay City Shovels, Inc.

The board of directors elected **Frank A. Phillips** vice president in charge of sales and **Arthur W. Reidinger** secretary of the company. Phillips joined the firm in 1931 and Reidinger in 1938.

. . . at Clark Equipment Co.

Shareholders voted to increase the firm's board of directors from 15 to 17 and elected **C. H. King** and **D. H. Ross** to fill the newly-created positions. King is vice president of the company and heads the Automotive Division. Ross is assistant to President **George Spatta.**

. . . at Brooks Equipment & Manufacturing Co.

Frank Lang, Jr. became resident plant manager. He was most recently plant superinten-

2¼-yd. MICHIGAN 175A carries heaping bucket load of ammonium sulfite . . .

This big POWERHOUSE handles bigger jobs cheaper

Check the specs of the MICHIGAN* 175A:

BUCKET CAPACITY..... 2¼ yds.
WEIGHT..... 24,100 lbs.
LIFTING CAPACITY..... 15,000 lbs.
SPEED..Up to 27 mph, Forward and Reverse
HORSEPOWER..... 133 Diesel, 126 Gas, 165 Supercharged

Don't look for "comparative" data on the MICHIGAN 175A—there is *no machine comparable*. This big bruiser is nearly 50% bigger than the next closest machine on the market. From flywheel to bucket, the 175A is built to do bigger, heavier jobs—jobs that no other rubber-tired machine can handle.

Better traction and flotation With the MICHIGAN's exclusive power train—300% torque multiplication, power shift transmission (no engine clutch) and planetary wheel axles—you get a shockless flow of power right down to the ground. There's no surge, no wind-up in the axle shaft, no wild wheel-spin. The operator has feather-touch control over his wheels; in weak soil conditions or mud, he can ease off or step up the power to keep from digging in. With this kind of smooth power transmission, you get the full advantage of the MICHIGAN's extra weight and power—you dig material *out*, you don't dig the machine *in*.

Hydraulic power does the work In spite of its size and power, the MICHIGAN 175A is easier to operate than most machines one-third its size. Hydraulic power does all the real work: power steering, 4-wheel power brakes, power-shifting with two simple levers on the steering column, no clutch pedal.

See it in action! We'll prove that the MICHIGAN is in a class by itself in the Tractor Shovel field: your local MICHIGAN distributor will arrange a demonstration—on your own job, if you wish. Or write for 12-page Tractor Shovel booklet containing explanation and cutaway drawings of the MICHIGAN power train. Any MICHIGAN is available on a low-cost Lease Plan—ask for brochure which explains how you can use it.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
440 Second Street
Benton Harbor 30, Michigan
Phone WA 6-6184

*A Trademark of Clark Equipment Company

Circle No. 36 on Reader Service Card for more information

Cuts Waste Motion with RCA 2-Way Radio

Dispatcher of trucks and materials handlers assisted by a clerk coordinate the efforts of truck drivers and labor crew from a centrally located office.

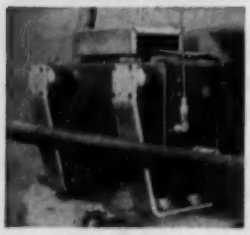
Less Than One Year's Pay-Off for Carfone Equipment Predicted at Rohm & Haas

Service peaks on Mondays and Fridays at the 46-acre plant of Rohm & Haas at Bristol, Pa. used to tax materials handling equipment beyond capacity. Empty runs wasted men and trucks, cut down on efficiency. Instant RCA 2-Way Radio communication with five fork lift and three stake trucks, commencing in March, this year, licked the problem. In addition, since using radio they have eliminated much "paper work" and now are using only one form instead of four.

Foreman stops at truck to radio instructions to office—another one of the "extra benefits" reported.

Based on an estimated annual savings, the materials control area supervisor predicts that the equipment will pay for itself in less than a year.

RCA 2-Way Radio permits drivers to get started on new assignments at a moment's notice. Dispatcher can "pick-up drivers" at any location to efficiently eliminate wasted time and trucks. Even in high noise level areas, the two-way flow of information is fast, continuous and positive, thanks to directional re-entrant horns.



Special "shock mounting" developed by RCA for this installation to cushion equipment against rough roads.

RCA *Carfone* equipment can do a similar job for you in handling materials efficiently in your plant . . . indoors or out. Precision manufacturing and built-in quality for which RCA is famous, are your guarantee of top performance in the toughest kind of operation. Mobile units fit almost any handy location, require a minimum of maintenance, permit quick servicing when needed. The RCA Service Company provides nation-wide service facilities if desired. Why not get complete information now?

RADIO CORPORATION of AMERICA

COMMUNICATIONS EQUIPMENT **CAMDEN, N. J.**

Radio Corporation of America
Dept. T-131, Building 15-1, Camden N. J.
In Canada: RCA VICTOR Company, Limited, Montreal

☐ Please send information on RCA 2-Way Radio
☐ Have an RCA representative get in touch with me

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Circle No. 128 on Reader Service Card for more information

MEN IN THE NEWS

Continued

dent and personnel manager of the Wausau Manufacturing Company, another Borg-Warner subsidiary.

. . . at Borroughs Manufacturing Co.

Elmer W. Niskala has been named general sales manager of both the steel shelving and office furniture divisions. He has an extensive background in the industry, dating from 1926 and ranging from design to sales. Before joining Borroughs he was Pittsburgh branch sales manager of Interior Steel Equipment Company.

E. W. Niskala

. . . at C & D Batteries, Inc.

Plant superintendent **John F. Simon, Jr.**, was elected to the board of directors at the latest stockholders meeting.

. . . at Colt's Manufacturing Co.

President **B. Franklin Conner** has retired after more than 30 years of service. He will, however, continue to guide the company as a member of the board of directors.

. . . at National Container Corp.

Arnold Ginsberg was elected a vice president at a recent meeting of the board of directors.

. . . at Lincoln Engineering Co.

Twenty year veterans, **Carl H. Mueller** and **John E. Renner**, were appointed vice presidents. Mueller will have

Maneuverability...

...WHEN YOU NEED IT MOST

In the best regulated plants there are times when in-going and out-going shipments represent a real "bottleneck" . . . production lags and customers' delivery suffers! The maneuverability of a Moto-Truc is the answer for many plants with limited trucking facilities. The Moto-Truc line offers the most compact electric powered trucks in the world . . . yet can handle up to 10,000 pounds. Write for Bulletin No. 54 covering the complete line . . . and remember . . . there's a Moto-Truc for every purpose.

MOTO-TRUC
Designers FOR THE INDUSTRY
PATENTED

The MOTO-TRUC Co
Representatives in Principal Cities

1955 E. 59th St. • Cleveland 3, Ohio
Pallet . . . Platform . . . Hi-Lift Trucks
The *Originators* of the Walkie and Small Rider Type Truck.

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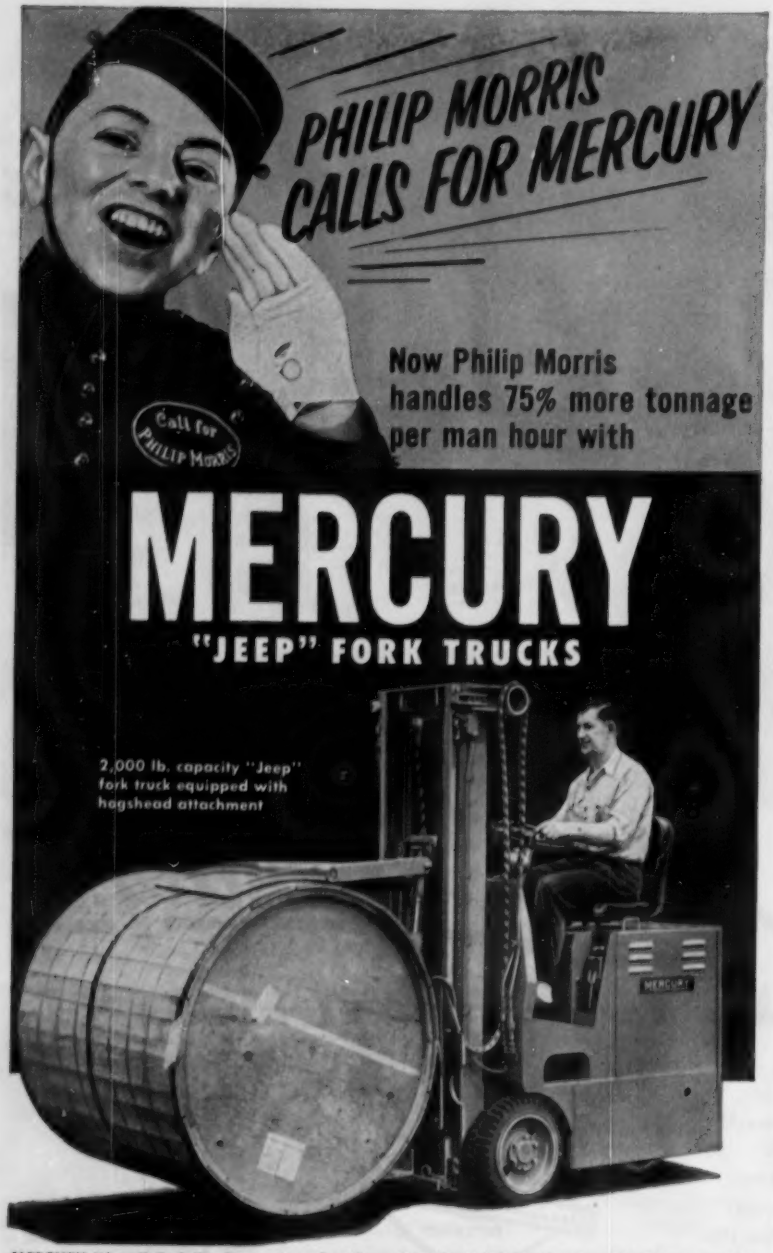

MERCURY "Jeep" Fork Trucks equipped with special hogshead attachments now handle four times as many tobacco hogsheads per man-hour than originally handled. This new method permits double tiering in freight cars . . . virtually eliminates damage to hogsheads.

MERCURY fork trucks (all types and capacities) are constantly solving difficult handling problems in all industries . . . effecting savings that amortize initial cost of equipment in record time.

MERCURY "Fork Truck — Trackless Train" Systems are recognized industry-wide as the most economical and effective method of moving and stacking material.

CALL FOR MERCURY (as Philip Morris and many other nationally known companies have) . . . our engineers will show you, too, how to save time and money in vertical stacking and horizontal handling.

MERCURY
FORK TRUCKS · TRACTORS · TRAILERS

Send me free literature illustrating and describing Mercury fork trucks.

Name_____

Title_____

Address_____

City_____ Zone____ State_____

Mercury Manufacturing Company, 4154 South Halsted Street, Chicago 9, Illinois

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MEN IN THE NEWS

Continued

charge of engineering and Renner will head the sales department.

. . . at The Electric Storage Battery Co.

Former assistant manager of the New York branch sales office, **H. H. Warren,** was appointed assistant sales manager of the Exide Industrial Division. He will headquarter in Philadelphia. Warren joined the firm in 1921 as a battery assembler and has served in a succession of positions.

. . . at H. K. Porter Co., Inc.

Julius C. Hydrick was named works manager of Quaker Rubber Corporation, a position he held during 1950 and 1951, when he was transferred to another Porter division in the same capacity.

. . . at The Stanley Works

William H. Cook, who joined the company in 1947, has been appointed assistant sales manager of the steel strapping division. He most recently represented the firm in southern Ohio.

. . . at Gar Wood Industries, Inc.

Milton G. Peck has joined the firm as vice president and director of sales. He was previously sales manager of Clark Equipment Company's electric truck section.

. . . at Permacel Tape Corp.

Dr. Harold M. Sonnichsen was named a vice president. He is a director of the technical division and a member of the board of directors.

If you're growlin' about replacement costs . . .

IT'S TIME TO SPECIFY **MONARCH** INDUSTRIAL SOLID TIRES

IF YOUR COMPANY HAS MONEY "TO BURN" . . . TURN THE PAGE. We are talking *only* to buyers who want to reduce solid tire replacement costs . . . with no sacrifice of performance or quality. That's our specialty. That's why Monarch gives you premium lift truck tires at standard prices.

Monarch pressed-on solids are manufactured from higher quality materials than *the best premium passenger car tires.* This is no idle claim! Our tires last longer because they actually are made better. It's as simple as that.

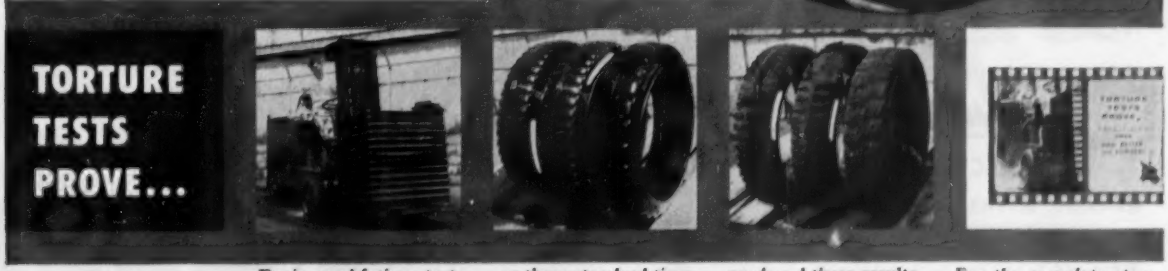
We can supply a complete range of types and sizes to meet every normal or special need.

If economy is your goal . . .
MONARCH IS YOUR TIRE!

THE MONARCH RUBBER COMPANY

210 LINCOLN PARK • HARTVILLE, OHIO
7-255 General Motors Bldg., Detroit 2, Mich.

8194-MR

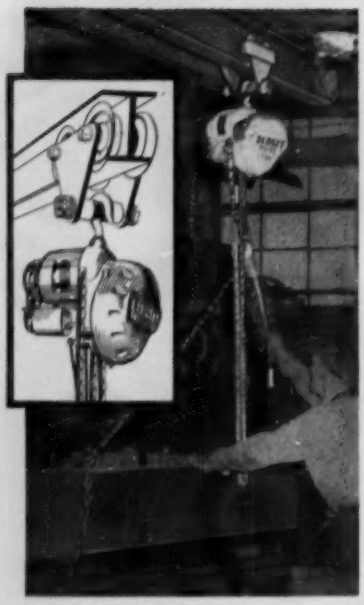


Engineered fatigue tests . . . on these standard tires . . . produced these results

For the complete story, write for Bulletin TD-200.

. . . MONARCH Mono-Cushions® WEAR BETTER . . . LAST LONGER

Circle No. 109 on Reader Service Card for more information



SAVE THIS FAST, EASY WAY

Cut load handling costs and production costs go down. To achieve this result, the 'Budgit' Electric Hoist is working at machines, in assembly and at inspection stations in more and more plants everywhere. It saves time and effort. The ¼-ton size can lift a 500-lb load one foot in less than two seconds. A slight pull on the control cord starts this fast action. And, electricity to operate the 'Budgit' all day costs only a few cents.

Let 'Budgit' economy save money for you. It's a complete lifting unit in itself — comes ready to hang up, plug in, use. No accessories to buy. No installation expense. Get the whole story of the tough, safe 'Budgit' Electric Hoist. Capacities: 250 to 4,000 lbs. AC and DC models. Prices: $139 and up. Call your "Shaw-Box" Distributor or write for Bulletin 391.

'BUDGIT' I-BEAM TROLLEYS enable a hoist to travel as well as lift the load. Made of tough steel. Ball bearings in wheels. Adjustable to fit various I-beam sizes. Capacities: 500 to 4,000 lbs. Priced from $15.50. Write for Bulletin 390.

'Budgit' ®

ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' and 'American-Microsen' Industrial Instruments, and Aircraft Products.

Circle No. 98 on Reader Service Card

HIGHLIGHTS of the month's NEWS

LATELY, we've been hearing and reading a lot about automatic handling, mechanized handling, automation, the push-button factory—but what about the men behind all these developments? We'd like to give a well-deserved salute to those men who designed the equipment that made today's highly-efficient systems possible—the mechanical engineers.

And, since this year the American Society of Mechanical Engineers is celebrating its 75th anniversary, let's review, briefly, the Society's beginning.

Back in 1880, there was a body of engineers in this country who needed an organization to foster and develop their professional and technical interests. Their talents were at work in the mills, foundries and forges of the metallurgical industry, in agriculture, textile mills, paper mills, railroad systems, power plants and manufacturing establishments—any place where the problem was one of what was then known as mechanics, or dynamics.

It had become obvious that these mechanical engineers in widely-separated industries had many things in common with each other that they could not share with other technicians and artisans in their own industries. Eventually, the Society's first meeting was held, with 30 men attending.

Today, the Society numbers some 40,000 members, in one or more of its 22 professional divisions. Certainly, the engineers in the material handling division have distinguished themselves in their efforts to make man's work easier. As a matter of fact, we could go back almost to the dawn of the human race, and the man who discovered that a heavy object could be placed on a sledge and dragged along with considerably less exertion than it took to carry the same object.

Check with Victor

For conveyor installations, transporting many types of material, under a wide range of operating conditions, there is *one* belting that will fit the job. It will cost less, operate more dependably, and last longer in service. It is probably a Victor product.

Victor, you see, manufactures the most complete line of textile belting in America. The many Victor-engineered constructions include belting of the solid woven, Neoprene treated, canvas-stitched, and balata types. Standard and special coatings and impregnations can be applied to untreated belts for hundreds of specialized uses.

One of the many of possible combinations of weave, thickness and treatment may be just the belt you need for your conveyor system. It pays to check with Victor before buying any belting product.

3403

Write today for full information

Victor
Balata & Textile Belting Co.
51 Park Pl., N.Y. 7 • 300-6 W. Hubbard St., Chicago 10
Factory: Easton, Pa.

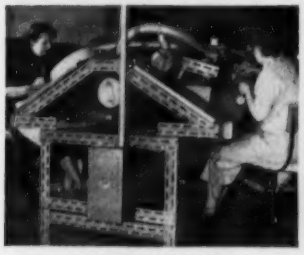
Circle No. 155 on Reader Service Card

frame it with DEXION!

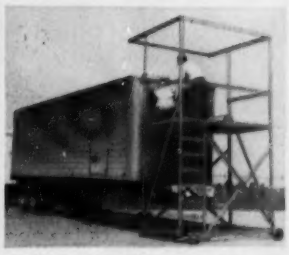
New "DO-IT-YOURSELF" framing material has scores of applications in your plant

TESTING BENCH

STAIRWAY

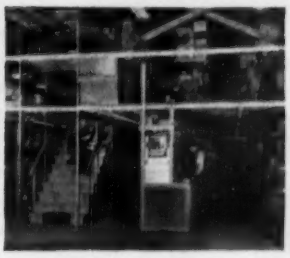


WORK BENCH



MAINTENANCE PLATFORM

STORAGE BINS



MEZZANINE FLOOR

GOODS CART

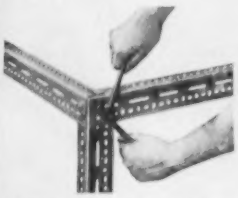
FRAMEWORK CONVEYOR

DEXION Slotted Angle is a packaged product, ten pieces to a package, each piece 10 feet long. There are three types, with dimensions of 3" x 1½" x .080"; 3" x 1½" x .104"; 2¼" x 1½" x .080".

Easy to store. DEXION package occupies approximately 1 cubic foot of space.

Here's why you'll want DEXION Slotted Angle over any other framing material

Anyone who can handle a wrench and a saw (or Dexion Cutter) can build with this precision-made, galvanized steel angle. And DEXION is so easy to use or re-use! There's no drilling—no welding—no waste. DEXION is strong and rigid—lasts a lifetime—and the price is amazingly low.

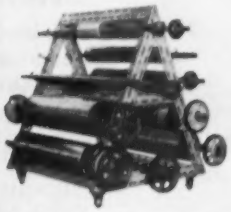


Simple to connect. All you need are two wrenches. No special parts—no training necessary.

Easy to cut. One down-stroke of DEXION cutter saves time and work.

Re-usable. You can dismantle and rebuild into other equipment.

Easy to measure. Diamond-shaped cutting marks spaced 3" apart.



Strong and rigid. Will support many hundreds of pounds.

DEXION panels. Available for shelving to support heavy loads.

You name it—DEXION will frame it!

Get the exciting new DEXION IDEA BROCHURE, which gives you full information—and shows what scores of manufacturers are building with this amazing framing material. Write direct to the address shown below.

DEXION DIVISION

ACME STEEL COMPANY

ACME STEEL

Dept. 7B, 2840 Archer Avenue, Chicago 8, Illinois

Circle No. 47 on Reader Service Card for more information

in Equipment

Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.

Lifts or Lowers Trailers

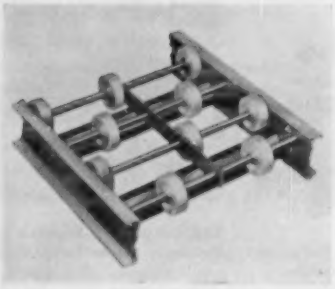
Fast loading and unloading of highway carriers is easily accomplished with the newly developed Rotary Truck Leveler. Designed to raise or lower the entire rear section of any truck or trailer, to bring the bed on a level with the loading dock, a raised center curb section accurately guides wheels onto the device. Push-button controls actuate an electric power unit that raises or lowers the 10- by 14-foot non-skid steel platform set into the loading dock area. Manufacturer is Rotary Lift Company.

Circle No. 209 on Reader Service Card for more information

Panoramic Visibility

Brand-new concept in lift truck engineering is Hyster Company's Monomast, which makes possible panoramic visibility. The tubular mast, said to be even stronger than comparable models, consists of two box-type sections, one telescoping within the other. Torsional rigidity in the mast has been increased 80 percent and mast deflection reduced 50 percent over conventional upright assemblies, it is claimed. Among advantages pointed out are faster maneuverability, safer load handling and reduced driver fatigue.

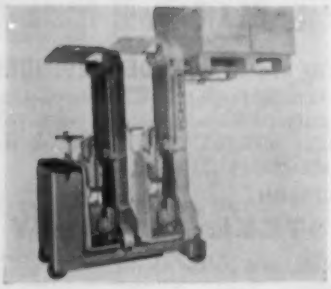
Circle No. 210 on Reader Service Card for more information



20 Percent Lighter Conveyor

Nylon plastic wheels running on nylon bearings mounted in an aluminum frame were recently introduced by Metzgar Conveyor Company. Outstanding advantage of the Nylo-Wheel conveyor is its 20 percent lighter weight. Manufacturer guarantees it against any weather condition and claims it will withstand temperatures from 150 degrees F. to -10 degrees F. It is impervious to detergents, salt water, fruit acid and lactic acid in milk and creamery products. Nylon bearings are frictionless and should not be lubricated.

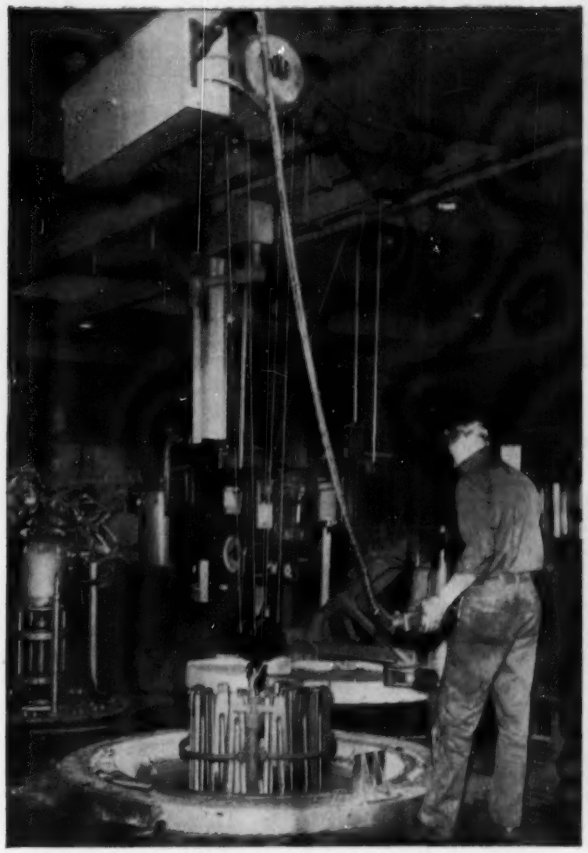
Circle No. 211 on Reader Service Card for more information



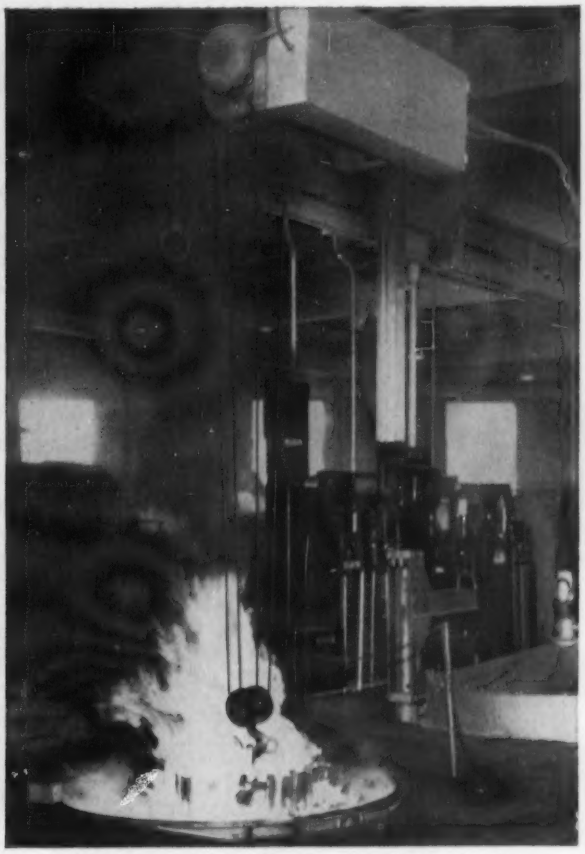
Mast and Operator "Ride Out" For Load

The entire upright assembly, including the operator of Moto-Truc Company's Mobil-Mast unit, moves out for the load on channel tracks. This affords on-the-spot visibility, as well as increased rigidity for load support, says the manufacturer. The 18 volt battery used to power the 4000 pound capacity truck also acts as a counterweight when the mast is extended. Features include roller grip controls, dead man brake, three speeds forward and reverse, and ability to operate in six foot aisles.

Circle No. 212 on Reader Service Card for more information



Yale Cable King lowers load into special heating furnace.



Following heating, aircraft parts are quenched in oil bath.

Yale hoist handles vital aircraft parts in 1,550°F. heat

YALE Electric Cable King—the world's hardest-working hoist—takes on another difficult assignment. This time, it's for Metallurgical, Inc., metal treating specialists of Minneapolis, Minn. Cable King lowers a 2600-lb. load of steel aircraft parts into a radiant tube pit-type furnace, holds it in the intense heat, then quickly lifts it free. Especially important to Metallurgical are Cable King's (1) smooth push-button operation, (2) manual release feature, easily operated by an "O" ring, that prevents air-cooling of vital parts during quench if electric power should fail.

This hoist—the "king" of YALE's complete line of hoists for every lifting job—needs no time out for cooling: exclusive YALE air cooling and load brake lubrication dissipate heat speedily and thoroughly. Cable King is available in capacities of ¼ to 15 tons for mills, foundries, forges, machine shops—wherever *continuous* heavy-duty work cycles are required. Winches to 3 tons are available for wall, ceiling or foot mounting. For full facts, send coupon today.

YALE*

INDUSTRIAL LIFT TRUCKS AND HOISTS

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GAS, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL TRUCKS • WORKSAVERS
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Please send detailed information on
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Continued

Electric Pick-Up Truck

The Electric-Car Division of Victor Adding Machine Company is marketing a pick-up truck called the Lugger. Payload capacity is ½ ton. The unit has two wheel drive, two wheel brakes, four speeds forward and reverse. Power is supplied by eight extra-heavy duty 165 ampere hour batteries. Two persons can comfortably ride in this quiet car, especially designed to carry tools and dies, raw materials, parts and finished goods and adaptable to many other uses.

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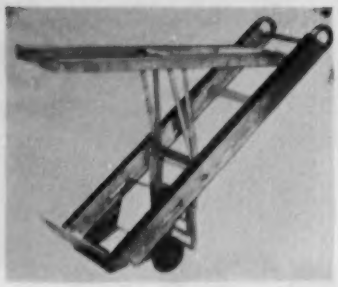
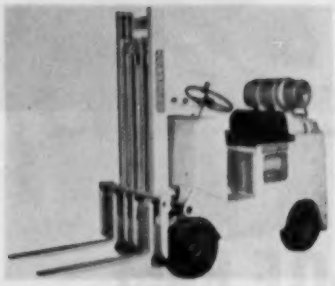


Stairwalking Hand Truck

One man can walk a 350 pound major appliance up a flight of stairs and put an air conditioner on the windowsill without help with the lightweight magnesium One-Man Stairwalking Dolly manufactured by L-S Heating & Engineering Company. Rubber-treaded climbing legs "walk" up wet, icy, or polished steps when the dolly's handles are pumped up and down. The unit is equipped with the usual rubber tired wheels for the level, and wide belts for going down steps with the legs folded.

Circle No. 214 on Reader Service Card for more information



Efficient Fuel System

All models of Towmotor Corporation lift trucks are now available for either gasoline or LP-Gas operation. The manufacturer claims that many refinements have been incorporated in the Towmotor LP-Gas fuel system to make it one of the most efficient fuel systems in the field. Among advantages pointed out are lower fuel cost, longer engine life, less down time, more mileage from oil, minimum carbon monoxide and safer operation.

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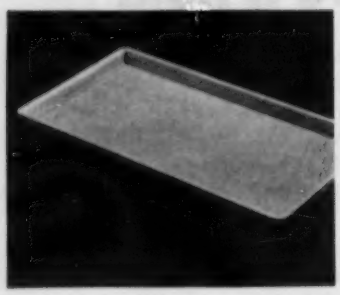


Low Maintenance Drying Tray

Molded Fiberglass Tray Company has developed a new drying tray with low maintenance advantages. Designed for conveyorized handling, the tray is made of fiberglass and polyester resins. Its smooth surface requires no paint or enamel, and wire reinforced top edges give it great strength. The tray can't dent, bend, warp or rot, and is molded into shape in one piece with a ⅜ inch lip extending around all four sides for easier rack handling.

Circle No. 216 on Reader Service Card for more information

High Speed Tractor

Loads up to 30,000 pounds can be pulled with Lewis-Shepard Products' new high speed combination riding-walkie tractor. Said to be compact and extremely maneuverable, top speed is 6.5 mph, with four speeds forward and reverse. The brake and first two (walking) speeds are controlled from the steering handle, while the third and fourth (riding) speeds are controlled by a button on the truck's platform. Manufacturer claims unit is ideal for intra-plant deliveries, order selection, or as a personnel carrier.

Circle No. 217 on Reader Service Card for more information

(Continued on page 145)

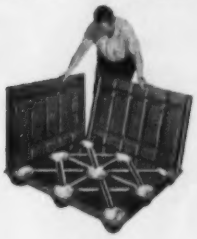
NOW! A PRACTICAL SOLUTION TO INTER-PLANT SHIPPING AND STORAGE PROBLEMS!

It's the new

ACKERMANN BAND-BOX

PATENT APPLIED FOR

SHIPPING CONTAINER



Assembles Easily — Bottom, sides and top dovetail. Parts band together in minutes.

Closes Compactly — All parts securely band together to give utmost protection to contents.

Transports Easily — Loads stack securely. Bottom is an individual pallet, supports over 30 tons.

Fully Nestable and Re-Usable — Empty boxes "knock down." Parts for 12 boxes occupy space of 1 assembled box.

All Steel, Fully Nestable, Re-Usable, Self-Palletizing, Tierable.

Compare the advantages of the new Ackermann BAND-BOX with any other container. Light weight to cut shipping costs, yet all the rugged dependability of solid steel. Fully nestable so return trips take little space, yet parts interlock to set up in seconds. Self-palletizing to make fork truck handling easier, yet equally practical to stack ceiling-high without toppling.

That's the kind of savings you can expect with the Ackermann BAND-BOX. Then consider that the BAND-BOX can be engineered to your own specific needs.

Get the full savings story. Write, wire or call for full details.

ACKERMANN MANUFACTURING COMPANY

WHEELING, WEST VIRGINIA

ACKERMANN WHEELING

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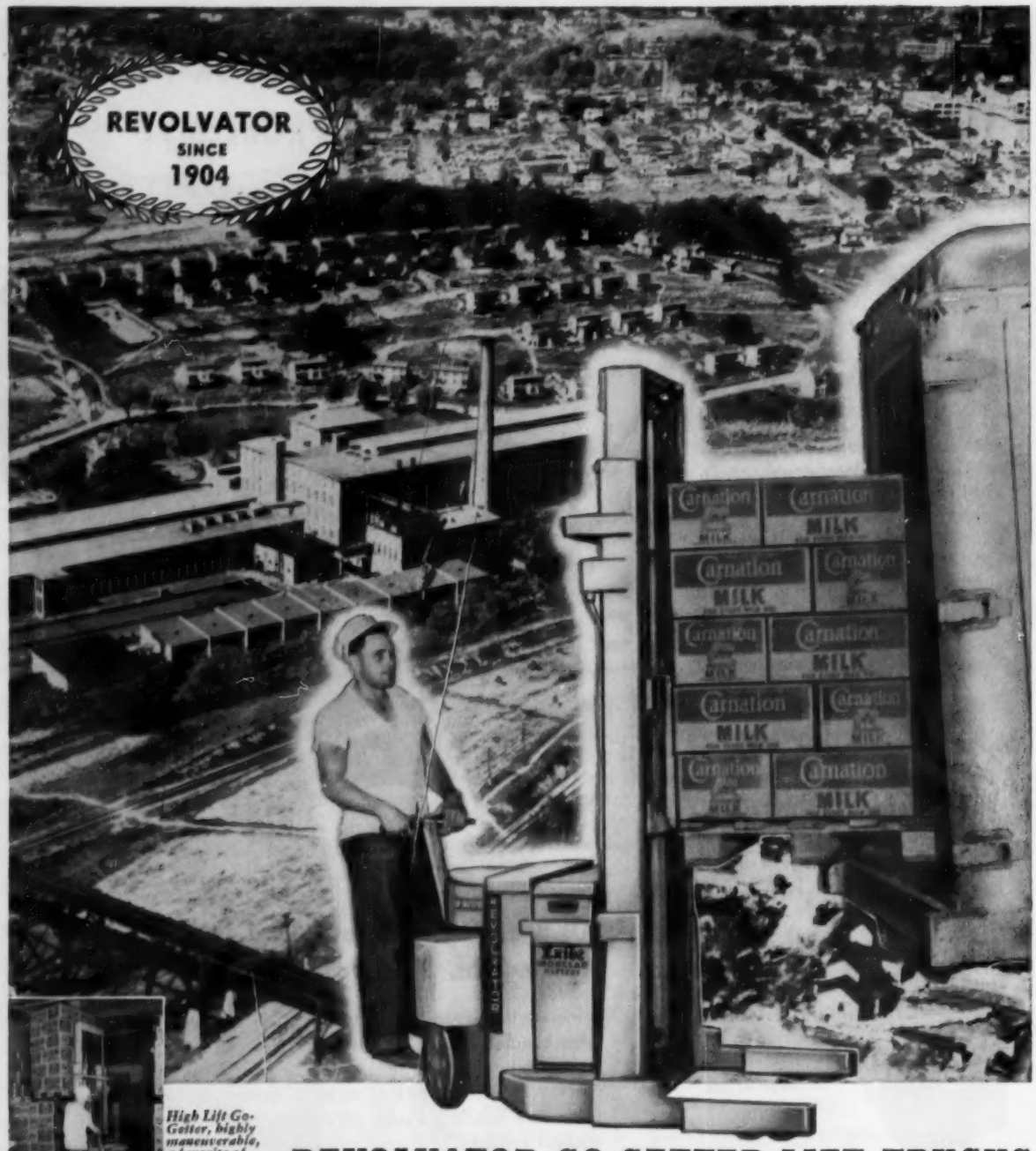

High Lift Go-Getter, highly maneuverable, a favorite of food producers, wherever narrow aisles and high stacking is required.

The same High Lift Go-Getter engaged in transporting goods from the warehousing operation to the shipping point — a real brute for work.

REVOLVATOR GO-GETTER LIFT TRUCKS

You Benefit By Over 50 Years of Diversified Experience

Thruout Industry Revolvator Go-Getter Lift Trucks have been used to solve a great range of materials handling problems. For manufacturers of heavy machinery—where area temperatures are high and loads are maximum; for packers of frozen foods with temperatures ranging from seasonally atmospheric to far below zero, Go-Getter Lift Trucks have proved their worth. No matter how different you may feel your requirements are, there is a standardized Revolvator Go-Getter ready to perform your most specialized requirements.

The quiet, smooth, powerful operation; the easy maneuverability; the freedom from heavy maintenance; the overall simplicity of construction of these Revolvator Go-Getters have made the name Revolvator synonymous with peak efficiency in materials handling.

Today write for full information.

REVOLVATOR CO.
8739 TONNELE AVE., NORTH BERGEN, N. J.

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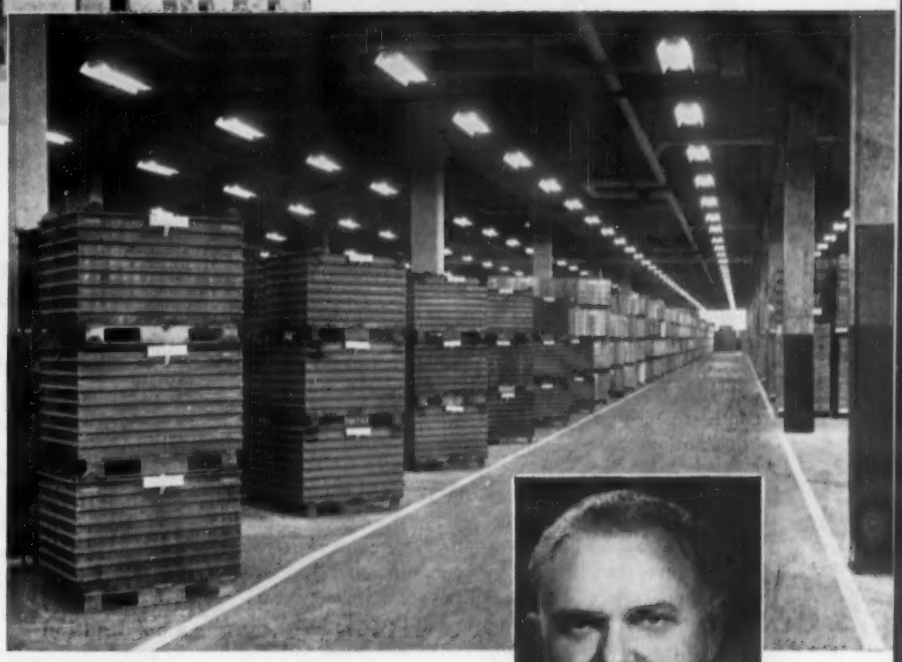
BEFORE: Reserve stock area as it appeared prior to reorganization.

Warehousing System with an Electronic Heart



AFTER: Same reserve stock now organized in pallet boxes piled 5 high alongside 12 foot aisles.

How standardization and complete integration of material handling and industrial packaging are serving Studebaker in the distribution of widely varied parts and accessories

By Carroll W. Evans,
Superintendent,
Parts and Accessories,
Studebaker Division,
Studebaker-Packard Corp.

THAT THE APPLICATION of the engineering approach to material handling can save you money is demonstrated in our South Bend installation. It handles items from cotter pins to truck frames, and the operation is completely standardized.

The heart of the system is the battery of electronic business machines, in the warehouse office, which processes incoming orders for 23 branches and all of our foreign outlets. This is in addition to the tabulating of inventory records. Thus, with standardized methods and material handling operations, we have a high degree of mechanical organization which compels work to flow through the plant in an orderly, efficient manner.

Handling of material is mechanized from receiving to shipping. Extending along one side of the building is the receiving dock, with unloading stations located at strategic points. Material is always unloaded as

near as possible to its final resting place. Inbound cased merchandise is handled on 40x48 inch pallets.

Receiving operations are standardized to four different methods, depending on the merchandise.

A common set-up for unloading trucks is the use of a "walkie" type lift truck, pallet, and roller conveyor.

An attempt is made always to load only one part number onto a pallet. A supply of pallets is always handy adjacent to each unloading area.

In the second method, fork lift trucks are used to unload pallet boxes of parts, possibly from one of our contract packaging sources. These boxes are furnished in a knocked-down condition from one of our Branches located in the same city as the packager. Many times these standard packs remain in the pallet box until withdrawn by the order picker. The receipt of palletized and strapped unit loads—through cooperation of our vendors—has resulted in a smoother receiving and storage operation. Many small products formerly handled piece by piece are now unit-loaded. Manually operated, adjustable loading docks are used outside.

By the third method, wrapped sheet metal is unloaded onto shop trailers and towed to location, many times in trackless trains of 8 or 10 trailers. Some 350 trailers are in constant use throughout the warehouse.

Doors are controlled electrically by switches located overhead on each side of the doors.

The hourly men operate doors right from their trucks by merely pulling the rope. There is also a wall switch left of the door. Formerly we employed men as door openers from early fall to late spring. Frequently we had five to six at a total cost of some $15,000 per year. This we have saved by investing around $500 per door. In addition to this saving, the standardization of door controls had eliminated delays, stopped trucks from hitting doors, lowered maintenance costs, increased safety, and improved sanitation.

A fourth method is where the item itself is large enough to be handled as a separate unit with a lift truck and without need of pallet or any other device.

The "location control" room plays an important and vital part in our operation.

It is situated in our Receiving Department office. A record card, kept on every part, includes such information as name, part number, plant location and packaging specifications. All receiving reports are passed over this file. The central station for our public address system is also located there, for a majority of the calls going over the system are in regard to locations or other data recorded on the card.

Coordination at High Level

Packaging and material handling problems are solved through the concerted effort of several people, which include the Superintendent, the Packaging Operation Supervisor, Manager of Packaging, Assistant Plant Superintendent, Traffic Manager, Scheduling Supervisor, Plant Layout & Material Handling Engineer.

The packaging section consists primarily of packing tables alongside a belt conveyor.

Parts to be packaged are brought up on pallets, or in pallet boxes, and placed next to the work area by a fork lift truck. At each station is a roller conveyor stub on which standard overpacks are packed; as they are

completed they are pushed onto the moving belt. At the end of the conveyor is a man who places the cartons on individual pallets. When the run is completed or the pallet loaded, it is taken to storage.

Mechanized packaging equipment, which has been used for some time, is doing a good job on our small, high-sales-volume items, such as pistons, connecting rods, and timing gears.

The operation is simple and quite automatic. The number of operators used depends upon the size of the run and, of course, the speed and length of the conveyor. Parts are inserted into surface-printed, solid kraft folding box containers and placed onto the conveyor with flaps open. The carton then passes through a mechanism that glues the top and bottom flaps, closes them, and carries them through a compression section for a distance sufficient to dry the flaps. Continuing on, it then passes through a printer which identifies the carton with the proper part name and number. As it leaves the printer, the carton is assembled manually into a standard-quantity pack and placed onto a pallet ready for transportation to the storage area.

The gluing-sealing machine is usually operated at an average rate of 1500 units per hour.

Our storage space is broken up into six separate areas, segregating parts into functional groups for the sake of ease in storing and other filling. The areas, or categories, are: (1) bin stock; (2) large, fast moving, "standard packs"; (3) accessories: (4) large sheet metal parts; (5) heavy steel parts; and (6) reserve storage for all types of parts.

There is a centrally located order-control office for all areas. Computers and calculators furnish the single item orders in location sequence, broken down by the six areas, all ready to be distributed to the order pickers. Numerically tabulated check lists are made for export orders only. Our branch stock orders are not checked against any check list but are filled on a fixed schedule. Dealers' orders received by 2:30 are shipped the same day. Emergency orders are all shipped on the same day as received.

The bin-section area, some 500 feet long, is where approximately 25,000 different parts are stored. All storage is in numerical, part-number sequence. We have stayed away from the pure index system just as far as possible. Bins are set up to store a nine months' supply of each item, which quantity, in most cases, is necessary from a supply standpoint. Between each row of bins is a three foot aisle to permit the order picker to climb up the shelves to reach the top.

A belt conveyor runs through the full length of the 500 foot bin section and 200 feet further on through the packing section. At the head end of the conveyor, which is adjacent to receiving, all back-orders for bin stock items are filled and sent directly to the packing section—all within 24 hours after receipt of material. Pallet loads to a Branch by-pass the conveyor and go directly to the shipping department. Any residue is then sent to bin storage.

Order pickers are equipped with small trucks on which they place material and periodically move a few feet to the belt conveyor, onto which they transfer the parts.

A punched order card is used for each item. It is perforated, the stub is left with the part; the balance removed at time of packing or shipping becomes the billing copy. All Branch orders are kept in numerical sequence, and as sections of an order are passed out they too are in sequence, thus saving a lot of steps for the order picker.

Large, standard packs are stored on pallets located on steel pallet racks. We use a special stacker for placing this material in place. This type of truck permitted the reduction of aisle space from 12 to 8 feet. Perhaps that is a lot of space for aisles, but the saving in labor is well worth it.

Accessories, packaged basically in a similar manner, are stored on pallet racks.

Bins are used for the small items. This area is enclosed and restricted to authorized personnel.

Every square and cubic foot of space is used because occupancy cost per unit of goods shipped must be

kept at minimum. Maximum use of space also reduces labor cost.

It is a fundamental axiom that warehouse ceilings should be high—much higher than average. However, our useable height is approximately 10 feet over the major part of our facility, with a 16-foot height in our reserve stock storage area and shipping dock. This 10 foot height does keep our climbing to a minimum.

Following the war, we resumed protective packaging of sheet metal items. A new study of methods and materials was undertaken. It was established that variable methods were desirable for this general type of material. The front fenders, a heavy mover, are more or less egg-shaped with the bottom open. Our decision was to box them. Storage and picking were then easy.

Fenders are transported to Shipping by trains usually made up of 8 to 10 trailers.

Fenders remain on trailers until they are loaded into transport trucks or railroad cars.

The fender itself presented an unique problem in that the inside apron is welded on. It has lots of sharp edges, but the 200 pound test carton, fabricated with a special corrugating medium to give extra stacking strength, stands up very well. We attempted to wrap them but were unsuccessful and had to go to a carton of "box car" size.

Rear fenders measure approximately seven feet and do not have too much rigidity. These must go into a long, narrow carton, and, to get the support necessary —and rather than use inserts—we went to a heavier test board than is normally used. Some fenders have a sharp corner that requires padding to keep them from puncturing the carton. A fibre-board stitched shoe was developed. It slips over this particular corner before the fender is inserted into the carton. The shoe is creased to conform to the contour of the fender. A similar fender, but with more rigidity than the one just discussed, is wrapped in excelsior pad tied with rope.

Doors are partially wrapped. The bottom section is packaged with a pad; the top window section is left unwrapped. This has the advantage of letting the shippers know what the item is, and that it must be handled with some care. Originally, our doors were packed in cartons, but because of the cost involved we changed to this type of wrapping. It has been good although there is somewhat greater risk of damage. But losses have been materially less than the excess cost of the carton. Four ½-inch steel straps secure the pad. One pad size is used for all the different door sizes.

Hood packaging seems to fall logically into an excelsior pad wrap. For the many types of hoods we supply, pads of only two sizes are required. The pad is secured by using about 10 barbed, steel clips placed around the edge of the hood over the pad. They are installed by using oversize pliers especially made for this purpose. Installation is fast, and the pad holds very well. Deck lids are treated in a similar manner, although we have also used cartons successfully.

Redesign Product for Better Packaging

Gas tanks, for years, always had a long, integral, non-detachable, crooked spout which was a never ending problem to us. Originally they were stored like cord wood, unpackaged. As time went on, racks were provided. We were still shipping them without any packing because of their shape. Then we tried wrapping them, and next we tried boxing, which was not too successful.

The cartoned tank as originally designed was too large and expensive, and the storage space required was excessive. Because of the packaging problem, our Design Engineers, at our request, re-designed the tanks to include a detachable spout which we now ship unassembled.

These facts are brought out to illustrate that an odd-shaped part doesn't always have to remain one. The pack finally developed was just a simple carton with roll-up pads slipped in on two sides, with the tank flange slipping down in the groove between the pads. The simple, corrugated interior packing insures safe delivery because it "floats" the tank away from the sides of the container. The spout is included loose in the carton.

Roof tops are stored in an upright position; there are approximately 100 in a row. A truck with a cradle holds seven panels for transportation to Packing.

The roof panel is one of the most difficult items we have to store and ship; it is rather awkward and bulky although light in weight. It is the roof section of the car, including the frames for the windshield and rear windows. For many years we used a heavy crate, which was rather expensive. We tried excelsior pads on an experimental basis, but the top did not have enough rigidity to prevent buckling.

We finally came up with a light-weight crate. The completed roof-top pack was made of 1x3 inch lumber using ⅜x3 inch re-sawn, hardwood diagonals. The crate measures 10x5x2 feet, and although it looks extremely flimsy it has the necessary rigidity to withstand shipping hazards. The roof-top, bolted to the bottom of the crate, is securely fastened. No other protection is necessary. A separate, packaged kit, consisting of the necessary reinforcing strips required to install the top to the car, is strapped to the inside of the crate. By use of this method we have found that the carriers handle the crate with an adequate degree of care, and our damage claims have been reduced to practically zero.

Our racks are square, tubular-steel, individual units, one set on top of another; in most cases they are used three high. I have always gone on the theory that nothing is permanent about a factory or warehouse layout. These racks permit us to pick them up with a fork lift truck and move them about as desired.

Steel pigeon-hole racks have been developed to slip into our standard racks, permitting us to keep separate many small-quantity items.

Tail-pipes are also stored on steel racks. Pipes come in to us from the vendors in bundles of five, a standard quantity we have worked out with each of our vendors. Wire is usually used. One shipment came to us tied with rope, but that proved very unsatisfactory. Whenever it is necessary for us to bundle them, we employ a jig in the shape which the bundle will assume. Steel strap is applied directly to the parts.

For many years, the standard method of shipping rubber floor mats was to place approximately 150 to 200 of them on a pallet and strap them down. Many times they would slip in transit and, as a consequence, the storage area always looked bad. After receipt in this manner, there was always trouble shipping them out, although there was little damage that could be done to them. The result of our Packaging Engineers' research brought about individual unit packs, packaged at the source. The faster moving items are palletized and shipped to our branches in that manner.

Using our standard pallet boxes we have developed a collar with a front opening, forming a bin where boxes are stacked, to permit orders to be filled from them. Great flexibility is obtained with this arrangement.

For years, steel chassis springs came to us in a loose condition. Every load had to be repiled at the storage area, taking hours on end, and requiring people of special classification. No one wanted the job. Chassis springs were dirty, heavy and greasy—and, as a result, handling them was a tough job.

Now the springs come to us on our own pallets from the spring manufacturers. They are piled in pre-determined quantities—in other words, a quantity which an auxiliary warehouse can order without becoming overstocked. No repiling is required. They go right into stock location from the receiving dock. Order pickers take them down with fork lifts and place them on trailer trucks for transportation to the shipping area.

Packing conventional transmissions in wire-bound crates has replaced a long-standing practice of shipping them loose. We have accomplished two things in crating: one is the ability to stack in greater quantities; and the other is the assurance that the product will be received in perfect condition.

Some heavy items requiring protective packaging are packed in wirebound boxes. The rugged construction and the simplicity of the lock fastener closure make this box particularly adaptable for re-use. If one is returning a part on an exchangeable basis, this type of box provides the means for the return trip. Any type of saddle or bracing can be incorporated, as well as interior cleats as hold-down devices. Our automatic transmission is an item that is returnable for exchange, and this box provides the means.

The old way of handling crankshafts was to transport them to us from our production plant on special skids with 2x4 frames in between. We stored them in the same way on the floor and later stored them on a special pallet—still using the 2x4 frame between crankshafts. They were packaged at time of shipment. Now we package them at the end of the production line and in cartons. Wood blocks at each end of the carton support the shaft. We have had no claims with this.

Bumpers are wrapped in an excelsior pad secured with wire ties. The bars are strapped to special pallets.

Chassis wheels are rather hard to handle. Originally we received them loose from a manufacturer—stacked in cars or trucks that took hours to unload since they had to be handled individually. Our problem was not one of protection but one of material handling. And since much of our material moves on pallets, we devised a pallet that would hold five wheels to a layer—four in each corner and one in the center. The pallet has a 1x1 inch rail around the edge to confine the first layer of wheels. They are stacked five layers high, with a 100-pound solid fibre sheet between and a frame made out of ¼-inch re-sawn lumber for the top. Only two steel straps need to be applied to confine the pack. The pallets, dividers and top frames are always returnable.

All palletized items are stacked at right angles, with a 12 foot aisle between rows.

We have standardized on one size pallet, 40x48, which meets our requirement very well. I believe that

the most efficient warehouse operation dictates a small rather than a large pallet. Ours, however, does fall more or less in the middle of the range.

Pallet boxes are stored on a 45-degree angle off a six-foot aisle.

You will notice that in one case we used a 90-degree and the other case 45-degree storage system. Each justifies itself.

Actually, pallet boxes have solved four of our warehousing problems. They solve a storage problem when knocked down; they solve a packing problem because the assembly, packing and closure is easy; they make the handling problem easier because of their adaptability to fork truck use; and, finally, they facilitate shipping because boxes hold more, cost less and weigh much less.

The bin stock packing section is on the end of the 700 foot belt conveyor.

Here we perform both export packing and domestic branch packing. All parts come down the conveyor in tote pans and are picked off by the packers and placed directly into the packing boxes. Some foreign countries require net weights for each item. They are weighed on the scale adjacent to the belt. These packers nail the lid on when the box is filled, after which they are towed to the shipping dock to be weighed, strapped, stenciled and stored.

There are also boxes along the conveyor line for back-orders, for all 23 branches and all large foreign dealers. This permits the continual packing of back-orders as they are received. Wirebound pallet boxes, 32x40x24, the same as those used in the storage area, are also used in shipping all branch bin stock items. These boxes are always returnable to us for re-use. They have been known to make 6 to 10 trips.

Export floor-stock packing takes place in an open area. Parts are hauled from the storage area on trailers, and the packing takes place directly from these trucks into the export packing case, which also rests on a trailer. When packed, they are hauled away to another area to be further processed for shipping. Adjacent is our export back-order packing area. The bin-stock items are stored in the bins, the floor stock rests at the end of the bins, and the packing is done on trucks directly opposite from where the parts are stored. The parts remain in this storage area until all the back-orders are received or sufficient are on hand to make a decent shipment.

The continual growth in our export business has created a demand for crate and box material of better quality than is normally used, and we have solved this problem by turning to the use of plywood. Because of the predominance of defense work, nearly all container grade plywood is made according to joint Army-Navy specification-139, or the revised NN-P-515. We use this plywood for our strictly commercial export demands.

Inherent advantages of plywood containers include the fact that large container faces may be constructed without joining. The material lends great resistance to moisture entering the container. We have found that plywood is readily adaptable to use on a great variety of types and sizes of containers; gives us a box light in weight, saving freight costs to seaboard; and provides large usable cube—all of which is conducive to lowering ultimate consumer cost.

Standardized Boxes Handle Exports

We have standardized on eight sizes of fast-moving, prefabricated boxes and 12 slower-moving ones. This takes care of up to 90 percent of our export parts and accessories shipments. Any one part, or any combination, taken from our stock of 30,000 different items may be packed in these boxes.

The parcel post section is located on a branch from our main conveyor line. A conveyor man directs the flow of pans to this area. Those going to parcel post are put on an upper roller conveyor which takes the parts to the packers. Cartons are conveniently stored overhead. We prepare 500 to 600 parcels daily. All benches and facilities have been standardized; our wrapping and packing operation has been greatly improved through this modernization.

The packing of engines has gone through quite an evolution.

Engines were originally sold with the oil pans assembled and, in most cases, without cylinder heads. The packing problem resolved itself into one of providing a cradle into which to set the engines and a wooden valve cover to protect the exposed valves on

top. This was secured by the use of two steel straps over the exposed valve cover and through the cradle.

While this original type of packaging involved a relatively low cost, it was realized that, to some degree, there was some exposure to damage. To eliminate, as far as possible, any risk of damage, the packaging method was changed. We employed a skidded, style C, modified plywood box which completely enclosed the engine, thus providing maximum protection against impact damage and the risk of any dust or foreign matter invading the internal part of the engine.

Better Packaging Lowers Consumer Cost

While the cost of the box proper is greater than the cradle previously used, off-setting economies were realized in the packaging operation—it was a simple process to remove the engine from the assembly line and insert it directly into the package, thereby eliminating extra handling.

While this change in packaging method of our replacement engines was primarily motivated by a desire for more complete protection, certain collateral and important benefits accrued.

The method permitted the elimination of the old pan assembly, thus lowering the cost of the engine to the dealer—and ultimate consumer—since, in most instances, the original oil pan on the engine was reusable. Of greater significance was the fact that the removal of this component made it possible to provide a higher degree of interchangeability of given basic engines than was previously the case, where the oil pan was a portion of the assembly. This reduced by more than two thirds the assortment of service replacement engines required to be carried in inventory.

Our present pack has the following important characteristics. No hold-down bracing is necessary. The box cover, which holds the engine in place, is easily secured by the use of six wire loops. These are placed through pre-drilled holes, around the edge of the cover, and through the cleats around the top edge of the box, and then sealed by mechanically twisting the loops.

Stored in the warehouse, engine boxes are stacked eight high.

The same design box is used for export, except that instead of ⅛-inch plywood, 5/16-inch is used, and we do use two tie-down braces for this pack and also two steel straps which are applied at time of shipment. A coated corrosion-preventive paper is inserted into the practically air-tight box before it is closed.

The complete engine is a bigger job—it includes fan, generator, starter, carburetor and other items. The problem of offering complete protection to this top-heavy item was considerable. It was solved by designing a skidded base, with cradle incorporated, on which the engine was mounted and bolted down at the hold down points of the engine. The box is lowered over the base and nailed; the only contact between the container and its contents is at the bottom. No strapping is required, except where pilferage is a problem.

The new dock has 10 locations for trucks, all under cover, and all equipped with hydraulic dock levelers.

The shipping area has some 65,000 square feet of floor area. Space for seven rail cars is provided indoors, along the side of the dock. Basically, there are accumulation areas for Export, LTL, Express and 23 branches. Branch names hang from the ceiling, and here again is an example of our standardization. A great percentage of our parts is packed in wirebound pallet boxes and loaded into carriers by lift trucks.

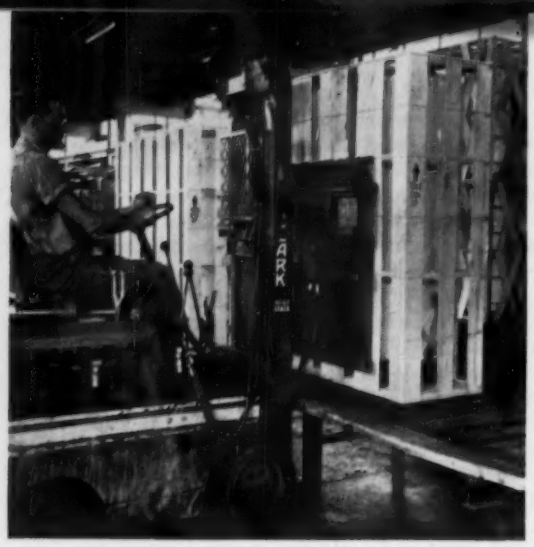
Magnesium dock boards bridge the gap to permit fork lift trucks to place boxes in rail cars with very little manual labor. All of our outgoing cars are equipped with modern load-locking devices. They permit great loads and the elimination of dunnage, saving the expense of supplying and installing special bracing.

For our some 39 or 40 electric trucks we have installed a consolidated charging panel which controls our sequence charging operation.

By sequence, we mean that a fast charge is given half of the batteries for five hours, then the other half is given a five hour fast charge, and finally all of the batteries get a finishing charge, all at one time, for 3 hours. This type of charging is suitable for one shift

(Continued on page 126)

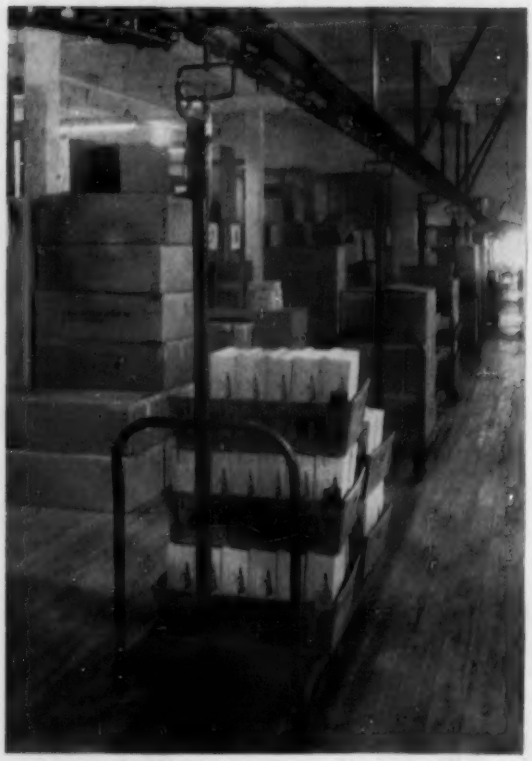
OVERHEAD POWER CONVEYOR carries T.V. sets to railroad siding to be loaded by 2-wheel trucks.



CRATES roll off gravity conveyor line and fork truck picks up 3 at once, completely coordinating equipment.

Using ONLY one or the other may be costing you money. Savings can be gained by . . .

Coordinating Hand and Powered



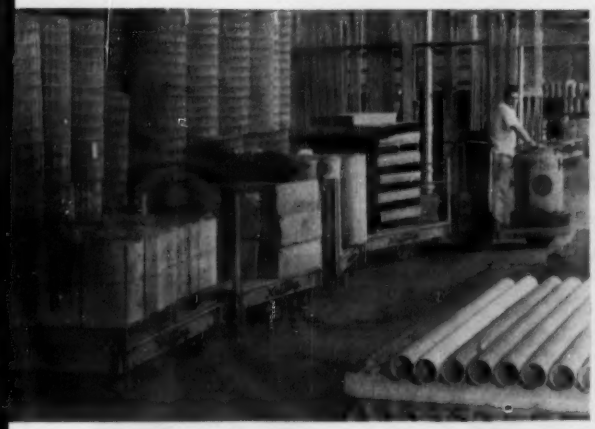
TRAILER TRUCKS work continuously with power conveyor. May be detached from line for manual use.

LOOKING at today's highly efficient handling systems, it's difficult to recall that, not too many years ago, non-powered equipment was used almost exclusively to handle materials for industry. Then, two-wheel hand trucks, portable elevators, gravity conveyors and chain hoists were common sights in practically every plant and warehouse.

With the exception of a limited use of powered equipment, most of the movement of materials was manual, and there was no systemized handling as we know it today. As work loads grew heavier, more men were hired to handle them. Fatigue and worker strain were great; accidents were frequent and costly.

It was inevitable that man's ingenuity would overcome this problem. It became increasingly evident as he designed and built equipment to perform the work previously done by "sweat and sinew". He began to successfully apply a new concept of material handling. So successful, in fact, that when conveyorized assembly lines first made their appearance, labor resisted their use strenuously, fearing many workers would lose their jobs. Of course, labor's fears proved groundless, as speeded-up handling and production resulted in more jobs than ever.

A growing number of companies began to realize the vast potentialities for savings in the previously-unexplored area of material handling. Material handling as an industry in itself started to take shape. Specialized equipment made to perform specific handling jobs were introduced and, more importantly, gained widespread acceptance.



GASOLINE TRACTOR and warehouse trailer trucks combine efforts in wholesaler's order picking operation.

LONG AISLES can be covered quickly by this riding type tractor which couples to manual equipment.

Equipment

Then, during World War II and an unparalleled acceleration in production for defense, powered material handling equipment soared into a newly-found prominence. Today, there are few companies, large or small, not using some form of powered equipment to transport, stack or asisst in the movement of materials.

Coordination Cuts Costs

And, in some instances, the pendulum swung too far in favor of powered equipment. Some firms felt that, with the purchase of mechanical (powered) equipment, they should immediately dispose of all manual (hand) equipment. Others, not completely sold on the relative merits of the new trend to mechanical handling, kept their manual equipment for emergency purposes —as insurance for the time when the new powered equipment might break down.

Experience has proved that, by coordinating the manual with the mechanical equipment, excellent results and unexpected savings can be achieved.

For instance, many hand equipment *manufacturers* today design their equipment with the same capacities as power units, so they can be more easily coordinated. Conscientious *sales engineers,* realizing that proper application of equipment at the lowest cost to the user is healthful for industry, are working to bring about better customer knowledge of each type of equipment. *Users* of power equipment have found that the less ex-

(More on next page)

INCOMING TRAILERS are promptly unloaded by hand and power trucks, eliminating dock congestion.

EFFORT is eliminated at storage company as fork truck and castered truck do loading and unloading.

TEAMWORK is the key note at this bottling plant. Mechanical and manual trucks provide smooth flow.

RAMPS present no problem at this company as gasoline burden carrier effortlessly pulls trailers up incline.

SKID LOADS are easily maneuvered into position by hand truck for tiering by mechanical straddle stacker.

pensive hand equipment, properly applied, will release power units for longer transporting, high stacking and handling of heavier loads.

Naturally, in some operations, the advantages to be derived from integrating manual with mechanical equipment are greater than in others. And, the factors which influence the success of such integration include (1) seasonal products, (2) intermittent operation, (3) light floors, (4) narrow aisles and (5) long hauls. Let's consider each of these factors separately, by examining different plants in which one of them is prominent.

Seasonal Products. This manufacturer operates throughout the year, but his product is seasonal and only during peak periods can powered equipment be utilized fully. Since time normally is not an influencing factor with the company, an average operating force can take care of unloading, processing and storing of materials. Hydraulic hand lift trucks are used to haul skid loads between departments, and portable elevators stack the loads in the warehouse. However, outgoing shipments are picked up by fork truck and loaded into trailer trucks and rail cars. And, since the powered trucks operate at a faster rate than the manual equipment, two fork trucks easily handle the long hauls to the shipping dock and stack the products into outgoing conveyances. When operations are stepped up for seasonal buying, an extra shift is scheduled and, occasionally, an additional powered truck is rented. Manual-mechanical teamwork? Definitely.

Intermittent Operations. Incoming and outgoing shipments are spasmodic, since manufacture depends upon orders received from the field and, in many instances, the product is engineered to customer's specifications. Weight of the product may vary from less than a hundred to thousands of pounds. Here, both gravity and powered conveyors operate from the loading dock to the storage area. Powerized walkie trucks stack raw materials, take them to the manufacturing

(Continued on page 142)

Material Handling Equipment Distributors Elect R. H. Braun

Robert H. Braun
President

William W. Oliver
Exec. Vice President

C. C. Haddrell
2nd Vice President

Albert Bode
Treasurer

WITH "advancement of the art of material handling through mechanization" as its "principal aim", the Material Handling Equipment Distributors' Association was formed in Chicago on May 16. Robert H. Braun, President of the Robert H. Braun Company, Los Angeles, was elected president.

Material handling equipment and supplies of all types and varieties were represented by the 68 dealers or distributors who attended the inaugural meeting and signed as charter members. Applications for membership were reported from more than 40 other companies, and expressions of desire to join were reported to be numerous.

Projects

Selected as projects to be undertaken immediately, providing investigation by appointed committees finds them feasible, is a Cost-of-Doing-Business-Survey and a Catalog Plan for distributors.

To avoid subjectivity and to promote healthful Manufacturer-Distributor relations and understanding, the group adopted governing by-laws entitling their principals to membership on an Allied basis. The Active membership is composed of firms having at least one contract agreement with a manufacturer of material handling equipment. A third membership—Associate—is for firms not having such contract or agreement, but which are engaged in selling, servicing or renting new or used material handling equipment. Only Active members are entitled to vote.

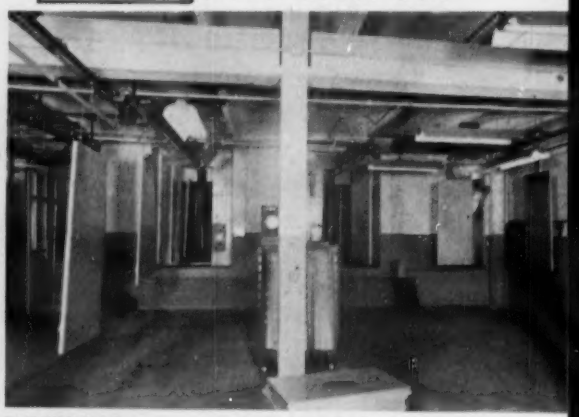
For purposes of selecting its Board of Directors, the Association divided the country into ten regions, and elected one member from each to serve a one-year term. Making up the Board are: Ralph Field, Field Machinery, Inc., Cambridge, Mass., Region 1; George Furnival, Furnival Machinery Co., Philadelphia, Region 2; Harry W. Embry, Jr., Embry Bros., Inc., Louisville, Ky., Region 3; C. H. Ellis, C. H. Ellis Co., Indianapolis, Ind., Region 4; H. A. Pierce, W. S. Nott Co., Minneapolis, Minn., Region 5; Harold Wiese, Wiese Planning & Engineering, Inc., St. Louis, Mo., Region 6; John C. Mayfield, John C. Mayfield Co., Houston, Texas, Region 7; Robert Arnold, Arnold Machinery Co., Salt Lake City,

(Continued on page 122)

BOARD OF DIRECTORS: Front row (left to right) C. H. Ellis, Indianapolis; H. A. Pierce, Minneapolis; George Furnival, Philadelphia; M. E. Canfield, Los Angeles; Harold Wiese, St. Louis. Back row (left to right) Robert Arnold, Salt Lake City; J. B. McDonald, Seattle; Harry W. Embry, Jr., Louisville; Ralph Field, Cambridge, Mass.; John C. Mayfield, Houston.

LOADED on wire hooks, parts are hung on notched bars between trolleys. Man, right, at loading station; man left unloads.

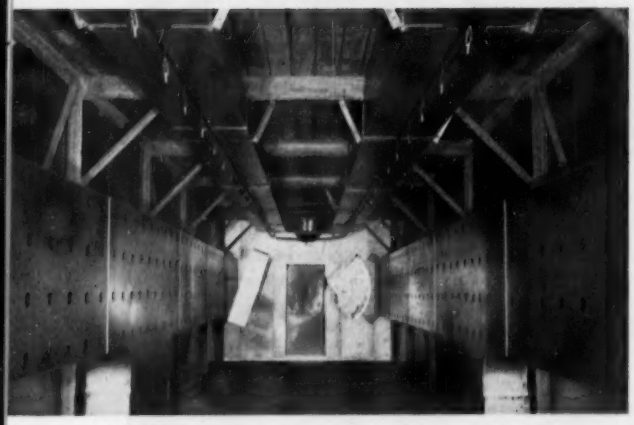
LEVELING the burn-off oven, parts are conveyed over 250 feet of "cooling line" before reaching paint spray booths. Caterpillar drive moves line from 10 to 25 fpm.



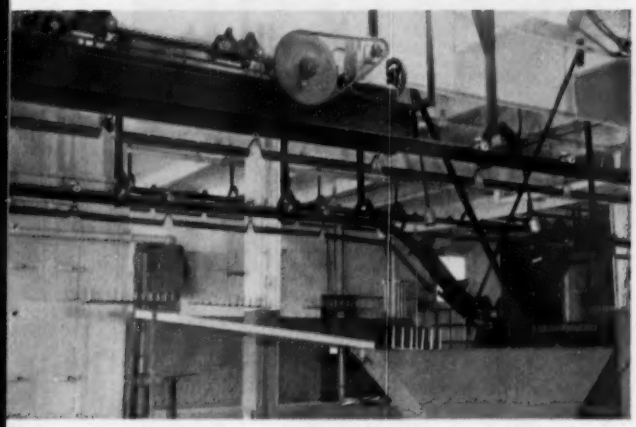
SHUTTLING into position to enter bake oven, parts on left are just leaving last paint booth. Finished parts, on conveyor right, are emerging from the oven.

Troublesome transfers, slow and costly manual manipulations have been eliminated as . . .

Conveyorization *Halves Finishing Costs*



SPECIAL hoods, or "cooling ducts", protect conveyor from heat as it makes five minute trip through burn-off oven operating at 600-700 deg. F. temperature.



DIPPING into eight foot tank for special small parts finishing is section of separate, 85 foot conveyor line carrying pin trays on notched suspension bars.

HANDLING by continuous overhead conveyor is credited with a reduction of 50 percent in finishing costs at Surface Combustion Corporation. The installation, in the firm's Columbus, Ohio, Janitrol furnace plant, handles parts through burn-off, paint-spraying and baking operations.

The new system facilitates the use of a burn-off oven, which has replaced the previous system employing degreasing fluid. Parts are cleaned of mill-oil in a five minute passage through a temperature of 600 degrees F. Within the oven area, cooling ducts protect the conveyor mechanism against excessive heat.

After degreasing, parts cool as they travel some 250 feet to the paint spray booths. Back and sides of each are painted in the first booth. In the second booth, the spraying position is on the opposite side of the conveyor line so that the alternate sides of parts can be covered without further handling.

Painted panels continue on through a bake oven operating at 300 degrees F.—and then to the handling station.

With the new, conveyorized finishing operations, a single eight-hour shift keeps up with parts assembly; formerly, three shifts were kept busy with the old method. The improvement has not only reduced man-hour costs by two-thirds but also made it possible to triple furnace production without requiring additional painting facilities.

Speed of the conveyor can be regulated from 10 to 25 feet per minute. Trolleys are spaced at two foot centers; the system can handle parts weighing up to 50 pounds. The over-all distance traveled by the conveyor system is 850 feet.

Extension of the system is now being considered. New planning calls for parts to be loaded on the conveyor near the first floor press room so that finishing operations can all be completed as parts are carried to the third floor assembly stock room. Further economies are expected from the elimination of all unnecessary labor and handling costs now involved in moving finished parts to the upper floor.

Pictures and data courtesy Landahl Chainless Conveyor Co.

COST CUTTING IDEAS

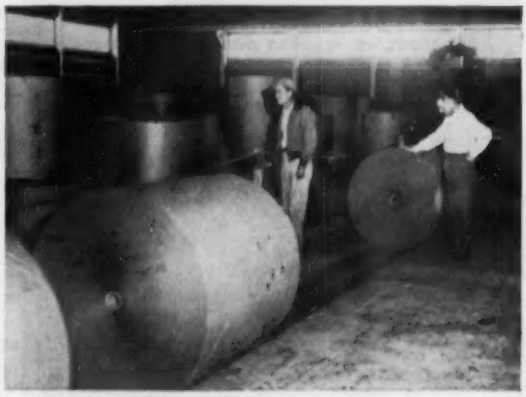
65% LESS HANDLING TIME

Planes are now loaded twice as fast and handling time has been reduced 65 percent by The Flying Tiger Line, Inc. at terminal headquarters in Burbank, California. When stepped-up schedules and rapidly increasing volume necessitated speedier handling, gasoline fork trucks were employed to meet the problem. The trucks load and unload all planes. Incoming shipments are immediately palletized, weighed and spotted in the warehouse according to destination, making loading of outgoing freight an easy and quickly accomplished matter. There is no longer any congestion of parcels, carrier turn-around has been speeded-up and overtime practically eliminated.

Circle No. 203 on Reader Service Card for more information

BELT SERVES TWO PLANTS

Paper rolls actually roll from plant to plant at St. Regis Paper Company in Pensacola, Florida, where the firm operates both a paper mill and bag plant. After manufacture in one mill, 1200 pound rolls of paper must be transferred to the adjoining bag plant for conversion into many different types of paper bags. When faced with the problem of moving the rolls, St. Regis officials investigated numerous material handling methods, and then installed a moving rubber sidewalk. The electrically operated belt conveyor is capable of hauling 10,000 pounds at a time. It is 10 inches wide, 445 feet long, and runs on closely spaced steel rollers. Paper is simply rolled onto the belt.



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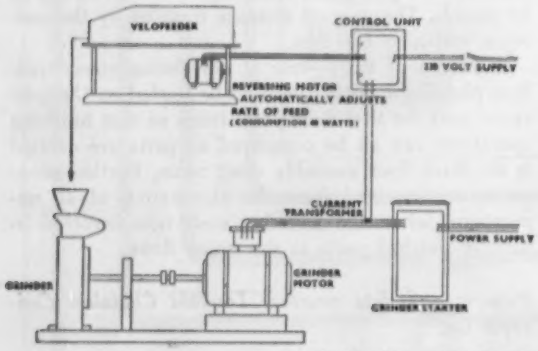


AUTOMATIC CONTROL PAYS

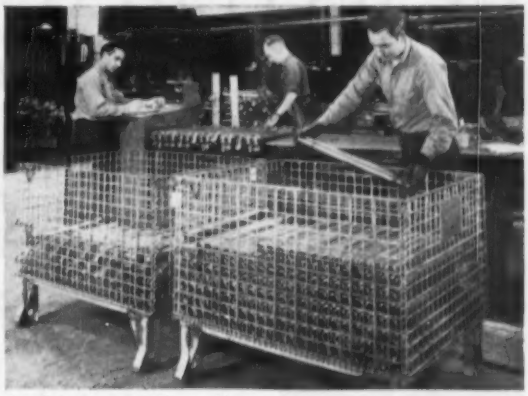
By eliminating stoppages and maintaining an optimum flow of feed, an automatic control system at Bibby & Sons Ltd., Liverpool, England, enables three grinders to produce as much as four previously. In this feed mill, a new type vibrating feeder delivers the product to the grinder under electronic controls. Formerly, overfeeding frequently choked up the grinders which then had to be stopped, opened and cleaned. This was costly and time consuming. Not only has the electronically controlled system stopped overfeeding and necessitated the use of only three grinders, but many other savings also have been realized.

Circle No. 205 on Reader Service Card for more information

IDEAS COST CUTTING

CONTAINERS IMPROVE SERVICE

Use of steel containers for shipment of universal joints has improved customer service for Blood Brothers Machine Division of Rockwell Spring and Axle Co., Allegan, Michigan, and saved an estimated 89 percent above the cost of the containers. Blood previously shipped its products in wooden boxes to customers within a 1200 mile radius. The customers are said to prefer the steel containers because they're easier to unload, there's less damage to parts in transit, they can be tiered when full and collapsed for return shipment, and inventory is simpler because stock is visible. Further savings are realized, too, since the percent of non-returns of containers has dropped from 29 percent (wooden) to zero (steel).



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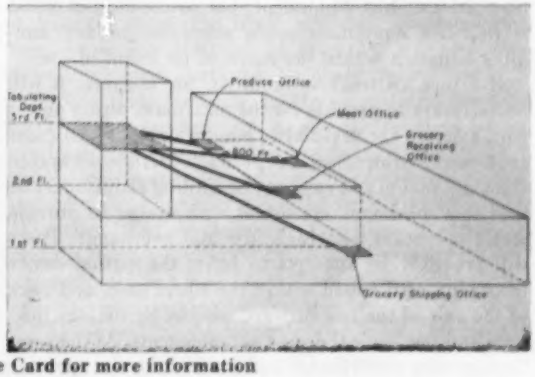
MANUAL EFFORT ELIMINATED

Excessive freight rates, inaccurate counts and employment of numerous laborers for handling chores were problems faced by a leading manufacturer of automobile engines in the receiving and storage of incoming castings. Castings were dumped into railroad cars at the foundry and manually sorted, counted and loaded at the assembly plant. Then, a fleet of electric fork trucks and platform trucks was purchased. Now, each class of castings is placed in a special skid box at the foundry and delivered by road truck to the assembly plant. Here, platform trucks enter the road vehicle and transfer skids to the receiving dock, where they are subsequently handled by fork trucks.

Circle No. 207 on Reader Service Card for more information

AIRTUBE SPEEDS SERVICE

Speed in supplying the needs of 56 supermarkets was the primary purpose behind construction of an ultra-modern warehouse by Food Fair Stores in Linden, New Jersey. This was accomplished mainly through installation of a pneumatic tube system which operates through the nine acre building. Coordination point of all warehouse activities is the tabulating room which is connected by airtube with the four centers of warehouse operation. Trips that would take human messengers as much as 15 minutes, now take only a few seconds. Orders are rapidly processed, rushed to the grocer and thus to the consumer.



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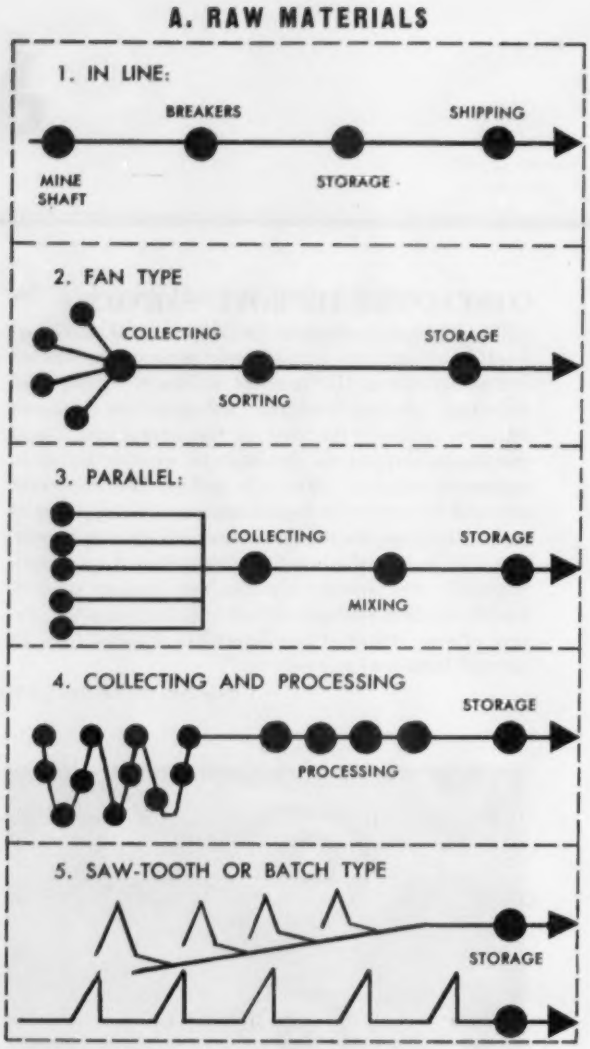
FURTHER HORIZONS IN MATERIAL HANDLING

Part 2—Conclusion

By Frank R. Simpson
Director of Research and Development,
The Kuljian Corp.



We have entered an era of technological struggle to attain greater perfection in the design and use of our material handling equipment. The prime consideration is to make equipment more adaptable to any handling situation within the scope of its intended use.

If a fork-lift truck is required, for instance, it will be necessary to provide for the maximum lifting power with a device (or devices) to handle a plant's particular containers, equipment, or products. Grade clearance must suit inclines or ramps. The turning radius must be kept to a minimum, consistent with design to provide stable operation with high lifts and overhangs. There will probably be attempts to bring the virtual center of gravity of the load within the wheel base, and back of the axle of the two forward wheels, by various linkages and mechanical design arrangements. At the same time, greater convenience and comfort for the operator will be provided so that he can handle more and greater loads with less fatigue.

The machine will take most of the physical burden from the operator and thereby permit him to concentrate on efficiency. This should be the line of greatest advance in material handling—the burden of physical labor shall all be borne by the machines of the future. And with it will be accomplished the elimination of as much mental drudgery as possible. The operator will be permitted to concentrate on the unusual and individual problems of each task.

Let us now consider how raw materials are currently being handled, and how the application of the above theory to future designs of handling equipment can be used to attain greater production, more ease of operation, and higher efficiency.

Raw materials form the base from which all mate-

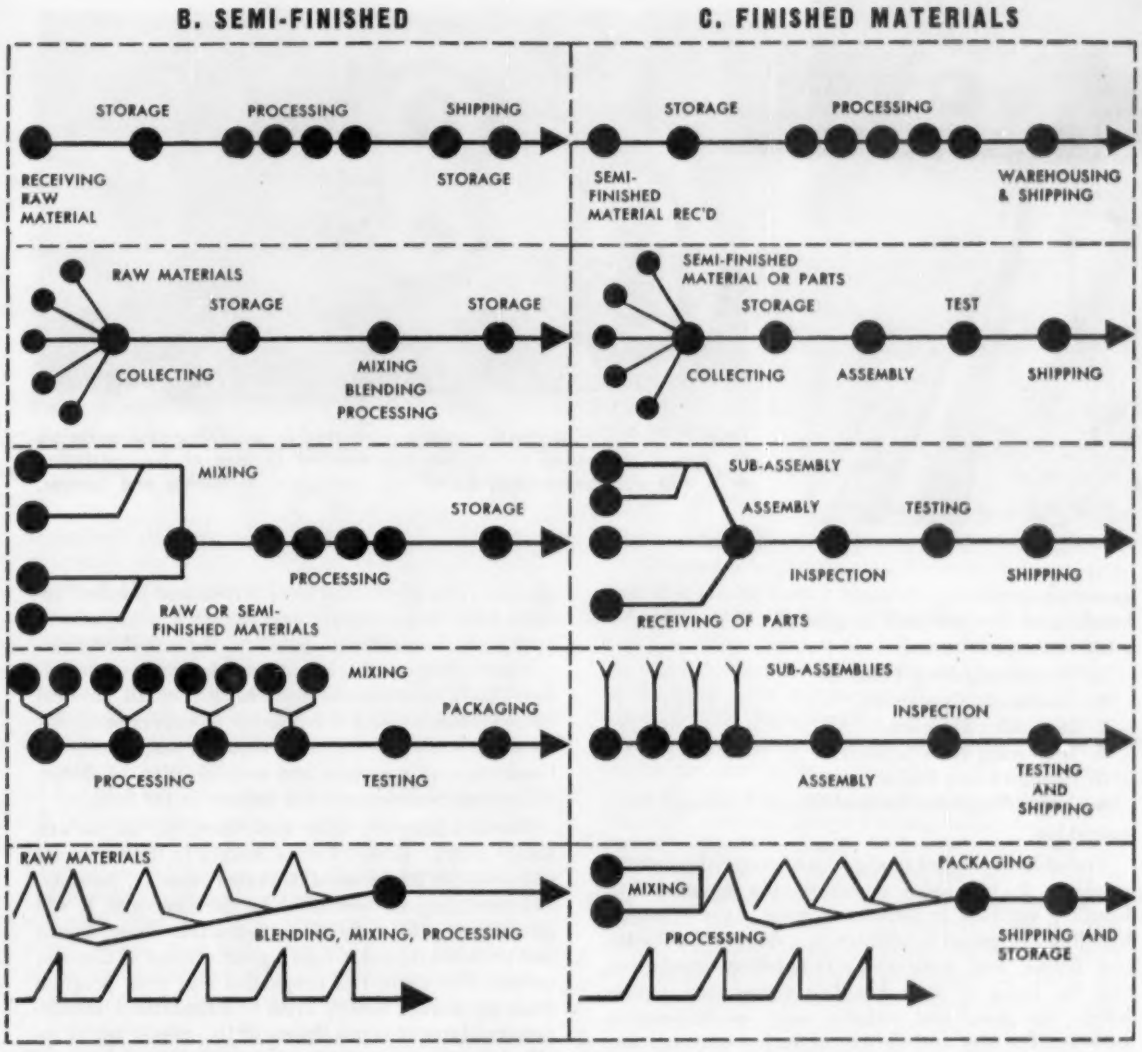


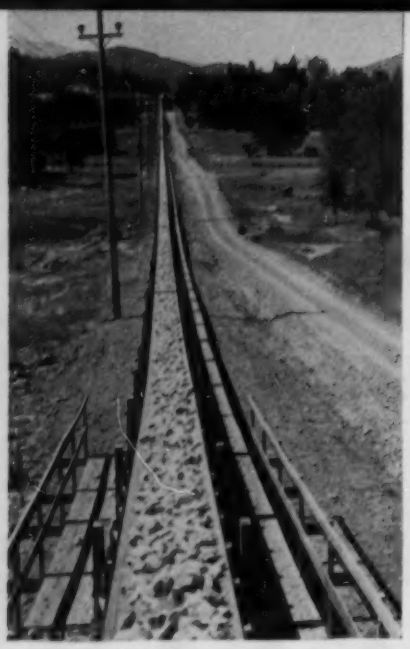
Figure 2: Typical Flow Patterns

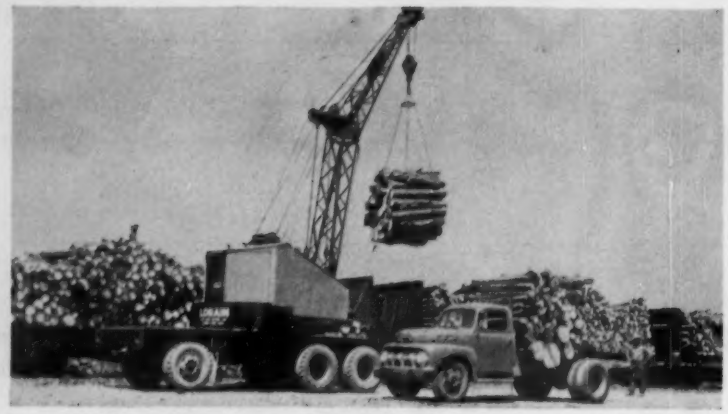
rial handling and production problems begin. In many instances, the materials must be gathered from random points throughout a given area and brought to a central point from which they can be handled in quantities. This presents a fan-type flow pattern, where all of the raw material paths converge to a central point as shown in Fig. 2. An instance of this is in the lumber industry, where the felled trees must be brought to a central point for transportation to a saw-mill—or the farmer who reaps his grain from various areas and brings it to a central point for shipment. In the mining of minerals, the source of the raw material is not too widely distributed. But even here it is necessary to transport the material back to a central point from which it can be started along a flow pattern of processing to suit the ultimate product.

The means used for gathering raw materials are highly diverse. The farmer uses a mowing machine for some materials such as hay and grain. If he also performs the operations of threshing the grain, separating it from the straw and chaff, and then putting it into bags ready for shipment, he must use a complicated "combine" that performs all these operations progressively. This, in itself, is a typical material handling problem that has been set up and standardized by the machine manufacturer. The combine is essentially a processing factory on wheels, efficient and rugged enough to operate over a limited variety of terrain. It eliminates the old-fashioned threshing machine. It permits the product to be transported directly to storage and later to a mill for processing. A great amount of waste handling is thus avoided.

The above represents only one example of pro-

(More on next page)





FAN-TYPE FLOW patterns, usually generated in providing raw materials to distant processing points, are represented in uses of transportation belts and self-propelled handling vehicles, in mining and lumber.

gressively increasing efficiency. Future advances in the handling of raw materials in general will probably be made along such lines as:

1. Simplifying Flow Patterns.
2. Combining Operations.
3. Increasing Mobility.
4. Improving Adaptability.
5. Standardizing Units.
6. Expanding Interchangeability of Parts and Subassemblies.

Probably the largest type-group of material handling machines in use today comprises the self-propelled handling vehicles. It includes a great many types of handling equipment in addition to a variety of automotive trucks and trailers. Earth-handling equipment (or, for industry, bulk handling equipment) comes within this group and includes many special-purpose vehicles. The size and variety of such equipment are increasing yearly, along with its efficiency of operation in accomplishing the purpose for which it was designed. These giants can level forests and jungles; remove hills or mountains; and change a wilderness to farm-lands, homesites, or public works in a short time.

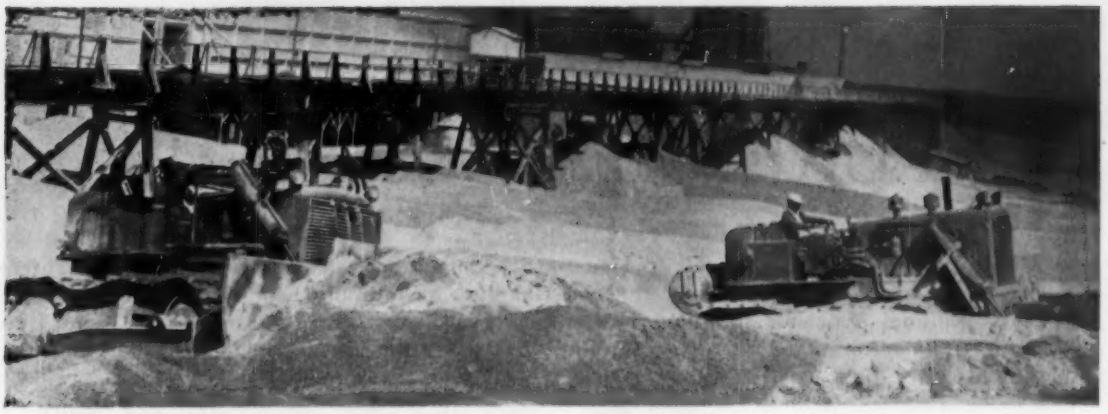
Future designs of this earth-moving equipment will most likely continue the mechanizing of all physical labor of man, making it simple for one operator to perform the work that formerly required many laborers. Combining of functions and simplification of design will reduce maintenance and failures in the field.

The fork-lift truck is the work-horse and the modern handy man all in one. Future designs of these vehicles will probably tend toward increased capacity, mobility, and versatility of operation. To decrease cost, it will be necessary to make the construction more simple and yet more rugged to take a great amount of abuse in service. The method of propulsion may even progress from the storage battery drive to a capsulized, atomic-powered type, if man's dream of the atomic age is realized.

Handling of raw materials, in particular, is greatly

PLANNING MATERIAL HANDLING FLOW LINES

PHASE OF PLANNING	A. RAW MATERIAL	B. SEMI-FINISHED	C. FINISHED MATERIAL
1. System Design Best Flow Pattern (See Fig. 2)	Determine Best: a. In-line b. Fan-type c. Parallel d. Collecting & Processing e. Saw-Tooth or Batch-type	Determine Best: a. In-line b. Fan-type c. Parallel d. Collecting & Processing e. Saw-Tooth or Batch-type	Determine Best: a. In-line b. Fan-type c. Parallel d. Collecting & Processing e. Saw-Tooth or Batch-type
2. Equipment Design To Suit Chosen Flow Pattern	Determine Best: a. Operations in machines b. Operations in transit c. Combining operations	Determine Best: a. Operations in machines b. Operations in transit c. Combining operations	Determine Best: a. Operation in machines b. Operations in transit
3. Building Design To Suit Chosen Equipment and Flow Pattern	Determine Best: a. Horizontal operation b. Vertical operation c. Type of buildings	Determine Best: a. Horizontal operation b. Vertical operation c. Type of buildings	Determine Best: a. Horizontal operation b. Vertical operation c. Type of buildings



SIZE AND VARIETY of bulk handling equipment are increasing yearly, along with its efficiency.

dependent on railroads, inclined planes, elevators, monorails, and many other types of heavy equipment. These, in turn, are dependent on a variety of traveling cranes, hoists, conveyors and similar equipment that feed materials to them. They are the tools whereby the raw materials in distant locations are brought to the cities to be converted into finished production. Afterward, they transport the completed articles to the markets, the stores and the ultimate consumer.

Railroads and other rail-guided equipment represent at least an in-line flow pattern, as shown in Fig. 2 (B-1), but in many more instances they assume a fan-type pattern in which the purchasing of parts for a finished assembly from many distant points requires rail transportation to bring them to the processing or assembly plant. For large equipment such as used in power plants, steel mills, machine shops and similar places, rail transportation is almost the only means of shipping them to their ultimate location.

Future designs of rail-guided equipment will probably tend toward lighter but stronger construction. It is necessary for railroads to have rugged equipment that can withstand high dynamic forces and heavy loads. But it is very desirable that their weight be kept to a minimum to save the cost of moving this extra load. This is extremely difficult. However, the use of titanium castings and shapes would permit a great reduction in weight, if the abundance of titanium could be increased and its cost reduced to make it comparable to steel.

There are now conveyors that transport raw materials for miles, much as a railroad, except that they are capable of continuous operation with uninterrupted discharge to their destination. They can handle bulk materials with approximately the same ease that long-distance pipe lines can handle liquids or gases. Conveyors can also be very small, located even inside a machine, and their applications seem endless in all phases of finishing and processing materials.

One particular example of a highly-developed use of conveyors is in linoleum manufacturing. Here it may be possible to find actually "miles" of felt in process at any one time. This extends from the raw rolls through the coating machines where several coats are applied in a predetermined sequence. Then the material is dried and treated as it progresses. It is next printed in various colors and patterns, cut, measured, inspected and packaged—all on conveyors. The felts are moved through a maze of treatments, turned-over and made to hesitate or pause for conditioning, without interrupting the continuity of the process. This continuous operation tends toward complete uniformity of the finished product.

(Continued on page 134)

MAJOR FINISHING OPERATIONS REQUIRING MATERIAL HANDLING

(Some typical industries)

1. MACHINERY	2. TEXTILE	3. FOOD	4. DRUGS	5. PAPER	6. CHEMICAL
Stamping	Spinning	Cleaning	Mixing	Finishing	Refining
Punching	Weaving	Preparation	Preparation	Printing	Mixing
Machining	Treating	Cooking	Forming	Cutting	Testing
Welding	Dyeing	Canning	Testing	Rolling	Packaging
Cleaning	Cutting	Baking	Packaging	Binding	
Inspection	Sewing	Freezing			
Assembling	Trimming				
Testing					
Painting					

CONFERENCE HIGHLIGHTS

Abstracts from some of the talks which were presented at the Materials Handling Conference, sponsored by the American Material Handling Society and held concurrently with the Sixth National Materials Handling Exposition in Chicago, May 16-20. Because of space limitations, the editors were unable to publish all talks given or any of the talks in their entirety.

APPROACH TO A MATERIAL HANDLING PROBLEM

By Richard H. Weingartz
Ken-Dick Corporation

There is only one reason for your existence today as material handling, production, or whatever type of engineer your company has categoried you to cut their material handling costs, and that reason is to study the operations which we know from experience can be improved.

When called upon to investigate a particular material handling problem, I believe there are six main points which should be kept in mind at all times:

First: Visit the trouble spot, not once, but several times at different times of the production day. If necessary, visit it on the various shifts, since many times problems are created during shifts which do not have first-line supervision.

Second: Become familiar with all the supervisory personnel, and, if possible, the workers who are definitely involved in, or concerned with, the problem. This one act alone can be very helpful to you because many worthwhile solutions have been offered by the production worker.

Third: Become familiar with the product and what operations are performed at the trouble spot. Probably the best way to accomplish this is to obtain a set of routing or operations sheets.

Fourth: Become familiar with all the pertinent costs, whether piece or day rate, and above all, make sure all overhead burden and fringe benefits are included.

Fifth: Familiarize yourself with the material handling equipment presently in use. Also, acquaint yourself with the condition, age and cost of operation of this equipment. This data usually can be readily obtained from your mechanical department or from the office of the plant engineer. The condition of the equipment, and cost of operation or maintenance, will be needed in your evaluation of the present system as opposed to the one you will recommend to solve the problem.

Sixth: This is possibly the last element to be considered, and it is a tool every material handling engineer should have. This tool is a working knowledge of all material handling equipment available, and also a general idea of its cost. This is extremely important because once all your data is accumulated, it will be necessary for you to be able to evaluate your proposed methods, or changes, in order to arrive at a good engineering and economical solution.

If you have availed yourself of all the data available in your plant, you should be able to arrive at a general solution of your problem before taking it to management for their comments and criticism.

After management has accepted your solution and appropriated funds to cover the cost, it would be wise to go back to the trouble spot in the plant and start orientating the personnel with the proposed changes, and possibly the new equipment and methods they will see. Often, a good material handling system fails because the new operation and equipment are completely new and foreign to the personnel, whereby a few hours spent in explanation would pay off by eliminating the headaches which can occur if your solution does not function as expected.

INTEGRATING TWO-WAY RADIO WITH MODERN PLANT FACILITIES

By Harry G. Boyle
Manager, Communication Field Sales
Radio Corporation of America

It seems to me there are three phases of material handling problems, each somewhat different in a manufacturing plant, and I will discuss here the application of radio in each of these phases:

One: The outside heavy equipment and the trucks operating between plants or buildings: large overhead cranes, earth moving shovels, switch engines and heavy trucks. In many plants, the use of radio on these vehicles is the primary installation, since these vehicles cover large areas and can be lost completely to all who need them for hours. Then, too, it is usually no easy task to issue orders or direct the operators of these vehicles because of their size or the local noise surrounding them.

Two: Fork trucks and other small vehicles engaged

in manufacturing or assembly operations. Labor hours are lost day in and day out because there is always a fluctuation of peak loads in the various phases of manufacturing. This means certain operations are suffering for lack of transportation during peak loads while others have a surplus.

The integration of radio on fork trucks permits greater utilization of these vehicles and their operators and reduces any surplus of equipment to a minimum. Here, too, as in outside operations, supervision of personnel is increased to the maximum when radio is installed. In manufacturing and assembly, you will find fork trucks will move more materials per hour or per shift due to the decrease in time lost giving instructions. Drivers never have to return for instructions, nor do they have to move from their trucks.

Three: This phase concerns the stores and warehousing. To streamline this operation, three base (fixed) stations can be established for communication with radio-equipped fork trucks responsible for delivering material from outlying stores areas to assembly operations. Two of these base stations can be located on the assembly floor and the third unit will operate from the stores department office. In this system, there is no central dispatcher. Radio communication provides direct verbal contact between the requisitioning supervisor and the truck operator.

In all manufacturing operations, space must be provided for storage of raw materials and parts on the production line, as well as space at the end of the production line for accumulation of the finished product prior to its delivery to the warehouse or to shipping.

With radio-controlled trucks to deliver raw material to the lines, the amount of material which must be kept on hand can be materially reduced without risking the possibility of a line shutdown. At the same time, closer control can be kept over the accumulation of finished products at the end of the production line. In this manner, use of radio not only reduces the size of the floor stocks required, but also reduces the space requirements.

PROBLEMS ENCOUNTERED IN YARD OPERATIONS

By Wade Meloan
Director of Sales
Pettibone Mulliken Corporation

In my discussion, I will not attempt to discuss the single-purpose yard operation, such as the coal, lumber or scrap yard. I am going to talk with regards to the variable yard, which is connected with most manufacturing operations. This yard needs the most thought in selection of the particular type equipment that will be most efficient and versatile for the operations which it must perform.

Before a manufacturer can determine what equipment he is going to need in his yard, he obviously must determine what products he is going to handle. This so-called average yard will be handling steel, castings, bulky assemblies, loose materials, and, further, will have yard maintenance work, such as roads, aisles and possibly railroad tracks. The everyday movement of materials in this yard will be the first three items—steel, castings and miscellaneous bulky assemblies.

Obviously, one of the first determinations that must be made in selecting a piece of equipment is the size and weight of the item to be handled. I have found that plant managers are prone to pick out equipment that is excessive in size for the job at hand. In few yards are there any lifts of more than two tons, and this is true even in heavy manufacturing.

It is not necessary to get a piece of equipment for 100 percent of the uses. If you can use the equipment in 98 percent of the applications, you have selected a piece of equipment that is adequate in size. For that other 2 percent, you can either go to the outside for help, or you can go to archaic methods in handling, because in the long run your costs are going to be lower.

The average yard is not fully paved, and average equipment that is used inside a plant is practically worthless in the yard when faced with adverse conditions. Even on smoothly-paved areas, the type of equipment that can be safely operated in the plant cannot be used when there is snow or ice present.

If part of the yard is paved and areas are allocated for storage in the paved area, invariably someone will place loads off the paved surface, presenting future problems in material movement. What I am getting down to is that a four-wheel drive lift truck swing crane, or bucket loader, is the only practical piece of equipment that can be used in a yard and will operate efficiently under all weather and ground conditions. The reason for this is the fact that the great strides made in four-wheel drive equipment have been made in machines designed for the construction equipment users and merchandised to those users.

Four-wheel drive front end loaders were originally developed for the construction industry. Until a few years ago, all these loaders were equipped with only one device—a bucket to handle loose material or carry round shapes, etc. In the last few years, these manufacturers have made attachments for these machines that will do three out of four of the jobs that are needed in the yard—a fork lift attachment, a bucket for handling loose material and a snow bucket.

Bear in mind, I am talking about the variable yard —not the single-purpose yard.

ADVANTAGES OF LP GAS FOR INDUSTRIAL TRUCKS

By Cleve T. Hendrix
President
Industrial Gas-Truck Engineering Co.

The utilization of liquefied petroleum gas as motor fuel for material handling and other types of industrial trucks and engines is being accepted with such enthusiasm that it is really astounding.

This application to material handling equipment is one of basic economics and improved operational fea-

(Continued on page 88)

How Handling Helps in *Quality Control*

By M. A. Parran, Supervisor of Quality Control, Hyatt Bearings Division, General Motors Corp.

SINCE handling methods can so greatly affect quality, it is important that material handling men be introduced, at least, to the fundamentals and objectives of quality control.

Manufacturers always have controlled the quality of their products; without doing so they could not have stayed in business. When the consumer buys his favorite brand today, he expects the same quality that he has been accustomed to in the past. Otherwise he will probably switch to another brand—one that he can depend upon for consistently good quality.

Not until recently has the use of "statistical methods" been adopted by manufacturers to improve still further the control of quality of their products. Such methods, meanwhile, have proven to be more reliable and more economical than the methods previously used. By means of statistical methods, it is possible to reduce variability in products to a minimum, and, as a consequence, to enjoy an expanding market of satisfied customers.

Whatever article a manufacturer makes, it must be produced to a certain degree of quality, and it must be competitive in price with similar products on the market. The quality of his products must remain stable. The manufacturer's ability to produce consistently to a sepcified standard determines his ability to produce a quality product.

Science of Defect Prevention

Today the term "quality control" means statistical quality control. The word "statistical" is usually dropped, however, partly because it is difficult to pronounce, and because the word is full of mystery for most people.

Quality control can be described as the science of preventing defects and maintaining uniformity of a product through the use of statistical methods. Its earliest applications were on acceptance sampling of bulk materials, such as coal and munitions, that can be evaluated only by destructive tests.

During the late twenties and the thirties, the use of quality control spread slowly. It was not until World War II—when it was imperative to manufacture war material to a high degree of precision with low loss in scrap, and to reduce inspection effort to a minimum—that quality control was given great impetus by the armed forces. It was this war-time effort that placed quality control in the fore.

The two pioneers in quality control were E. S. Pearson in Great Britain, and Walter A. Shewhart in the United States. They took the basic concepts of variation, which up to that time had been used only in theoretical statistics, and developed the control chart as a practical shop tool for controlling quality. Shewhart's book, *"Economic Control of Quality of Manufactured Product"*, was probably the greatest single factor in the development of quality control.

Three Phases in Manufacturing Control

Quality control in a well organized manufacturing firm usually has three functions—assurance, prevention and acceptance.

The "assurance function" involves investigation of customer complaints, preparation of executive reports on quality, and other, similar functions of a managerial nature.

The "preventive function" is concerned with the prevention of defects. The major parts of this function are: (a) the study of operations or processes to determine if they are capable of producing to specification; (b) design of experiments with statistical methods for greater reliability of results, and (c) design of sampling plans to effect the most economical inspection with the maximum of assurance.

In the "acceptance function", quality control applies statistical techniques to existing methods, usually in

the form of control charts. By application of these techniques to receiving, in-process, and finished goods inspection, it is possible to produce at lower cost and with less variation in the product.

It is in conjunction with the acceptance function that material handling is most important. It must be necessary to inspect the product with a minimum of delay in handling, and it is also desirable, in many instances, that the order of manufacture be maintained. (This will be described in greater detail in a later part of this article.)

Understanding of Shewhart Chart Essential

With this short summary of the role of quality control in mass production, it is now important to describe the most useful tool of quality control—the average and range chart developed by Shewhart. To understand the Shewhart chart it is first necessary to comprehend what is meant by a "normal distribution."

It is a basic law of nature that no two similar things are exactly alike, but vary according to a definite pattern. For example, the sizes of shoes worn by men are not all alike. They range from about size five to about size thirteen. Most will tend to cluster about size nine, with fewer occurring toward the extremes. This pattern, with variations, is characteristic of everything that occurs in Nature, or is produced by Man.

In general, if a large sample of parts with a controlled variable—for example, bearing diameters—is arranged in a frequency distribution, the diameters tend to cluster about a mean, and 99.7 percent of the parts will be within plus and minus three standard deviations from this mean. In Figure 1 is shown a normal distribution, with the percentage of parts falling within the six zones of plus and minus one, two and three times the standard deviation. This is called a normal, Gaussian, or bell-shaped curve or distribution. Standard deviation is a measure of the variation of the individual parts about the mean.

This technique of measuring a characteristic of similar parts, and drawing the distribution curve, is extremely useful for analysis of the lot from which the sample of parts came. It determines the probable spread of individual measurements, the average value, mode, and other chaacteristics. It does not, however, show a time trend with respect to the order in which the parts were produced.

This limitation of the frequency distribution is circumvented by the control chart as developed by

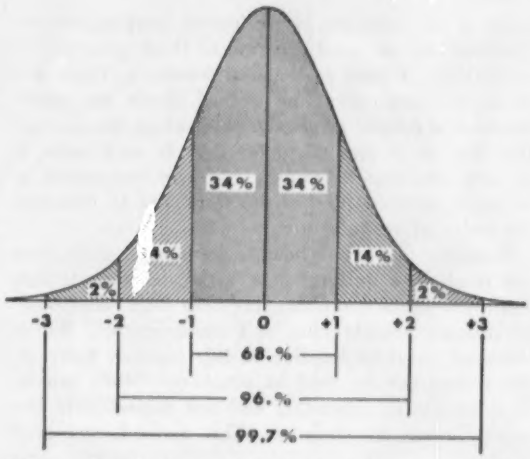


FIG. 1: Shewhart control chart shows how similar things vary according to definite pattern. Here, part diameters cluster about a mean and 99.7 percent are within plus and minus three standard deviations.

Shewhart. This builds a frequency distribution on a time trend basis, with the ordinate as the variable being measured and the abcissa as time (Fig. 2). Samples of five are usually taken, the characteristic under study is measured on each part, and the average and range are plotted. After a minimum of 25 samples have been taken at uniform time intervals, control limits can be calculated and drawn for averages and ranges within which the points must fall if the process is in statistical control. A point outside of these limits indicates that an assignable cause of variation exists, and should be investigated. The cause may be due to either man, machine, material or methods.

Control in Flow or Batch Production

In actual practice, control charts for averages and ranges have three uses: (a) to control a process and determine when to search for assignable causes of variation and take corrective action; (b) as a basis to change production procedures; and (c) to determine machine or process capability.

In general, a control chart is a record of past and present achievement and an indicator of future performance. It is extremely good factual proof to present when arguing a point related to quality.

This average and range chart is usually employed

(More on next page)

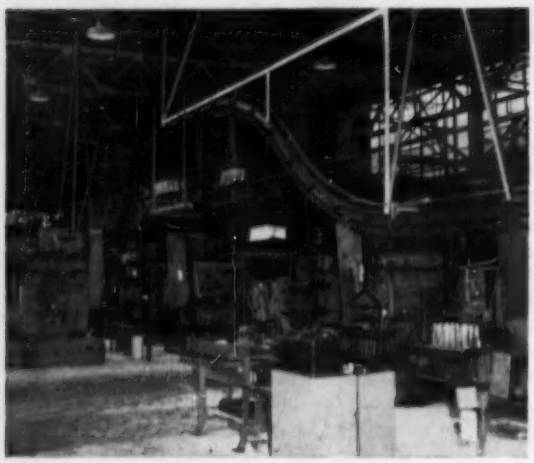
Today, the quality control function is becoming increasingly necessary to economical operations. It makes possible optimum use of raw materials and machines, increases economy in production, raises standards of manufactured goods. This discussion shows that quality control can operate effectively only in conjunction with sound material handling.

right at the machine or equipment working on the characteristic in question, and so there generally is no problem related to material handling. There are times, however, when the control charts are maintained at a central inspection point along the production line, or at the end of the line. In such cases, it is very desirable to employ conveyor equipment to assure a uniform flow of the work and to maintain the order of manufacture.

Handling of work in batches, such as on skids, does not result in a uniform flow. It creates considerable confusion on the manufacturing floor from standpoints of storage, housekeeping and transportation. Where the work must be handled in this manner, however, the system can be used to advantage. Skids can be sampled by an inspector, and not moved until the quality meets his approval. This method, employed where manufacturing is in job lots, makes it possible to determine the quality performance of individual operators.

Other charts generally used are "percent defective charts" (which show percentage of defective product being manufactured or received) and the "average number of defects" charts (that show the average number of defects per part). These are generally used on attribute inspection, which is the classification of each item inspected into one of two classes—either conforming or non-conforming to specification.

Where parts are made in large quantities on automatic machines—such as multi-spindle screw machines—some firms resort to sampling inspection. In this type of inspection there is drawn a sample, the size of which is dependent upon the quantity in the tote pan, skid or lot. By the use of tables based on probability theory, the number of permissible defects per sample are listed, and the inspector is thus guided in making his decision to accept or reject the entire lot.



Handling to Centralized Inspection

In some plants the work is carried from machines to a central inspection area by industrial trucks; in others on various types of conveyors. A unique system employed by Hyatt Bearings Division uses an

(Continued on page 94)

LEFT: Central Area Inspection at Hyatt accomplished by conveyor passing between banks of machines, where operators stack work in tote pans to be carried for sampling by pan quantities.

BELOW: Fig. 2—Control chart for averages and ranges helps determine search for causes of variation.

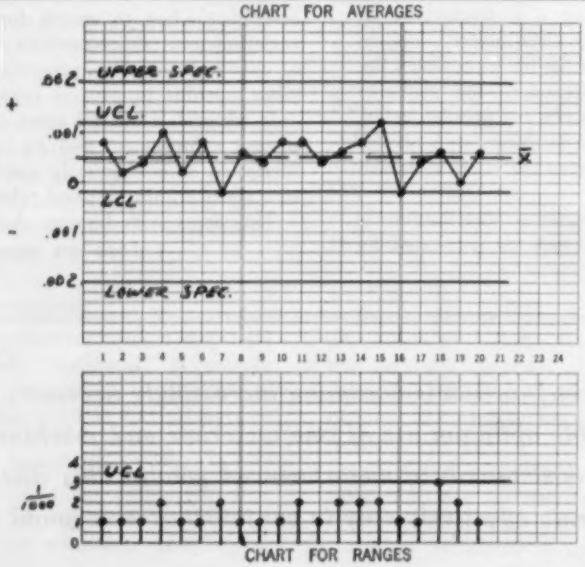
HYATT BEARINGS DIV.–G.M.C.
PROCESS CONTROL CHART

O.D. SIZE

Piece No. A-11360
Dept. 11
Date 3/30/54

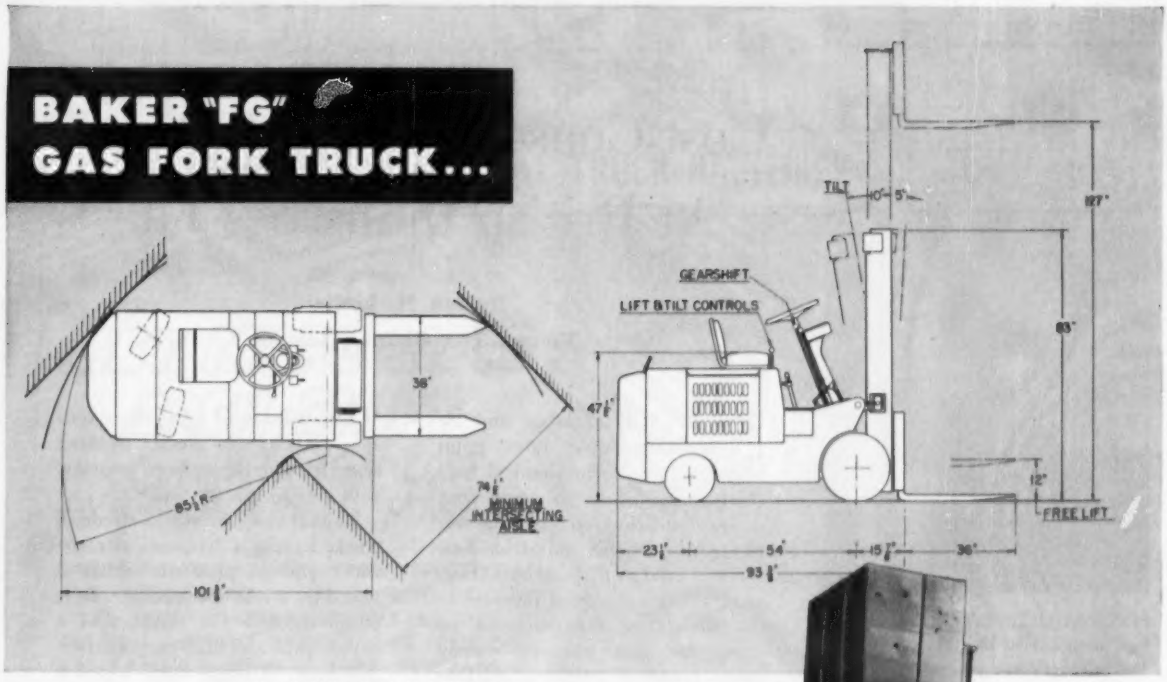
	SHIFT	DEPT.	OPER.
1st	✓	002	038
2nd			
3rd			

Time Interval
Machine No. & Name 92 ACME
Size
Zero =
Each Coil =



NO.	Trial				SUM.	AVG.	RA.
1	1+	0	1+	1+	1+	4+	.8+	1
2	1+	0	0	0	0	1+	.2+	1
3	1+	0	1+	0	0	2+	.4+	1
4	2+	1+	0	1+	1+	5+	1.0+	2
5	0	0	0	0	1+	1+	.2+	1
6	1+	1+	1+	1+	0	4+	.8+	1
7	1+	0	0	1-	1-	1-	.2-	2
8	0	1+	0	1+	1+	3+	.6+	1
9	0	1+	0	1+	0	2+	.4+	1
10	1+	1+	0	1+	1+	4+	.8+	1
11	2+	0	1+	1+	0	4+	.8+	2
12	0	0	1+	1+	0	2+	.4+	1
13	1+	0	2+	0	0	3+	.6+	2
14	1+	2+	0	0	1+	4+	.8+	2
15	2+	1+	1+	2+	0	6+	1.2+	2
16	0	1-	0	0	0	1-	.2-	1
17	1+	0	0	0	1+	2+	.4+	1
18	0	1-	2+	0	1+	2+	.6+	3
19	1-	1+	0	0	0	0	0	2
20	1+	1+	0	1+	0	3+	.6+	1
21								
22						$\bar{X}$	.51+	1.45 $\bar{R}$
23								
24								

BAKER "FG" GAS FORK TRUCK...



Dimensional Drawing of FG-60, 6000 pound capacity.

why "BALANCED DESIGN" makes it the best!

"Balanced Design" means that every component be engineered to its specific function. Further that all elements be matched and coordinated to work together for top efficiency, maximum dependable service and longest life.

In the "Balanced Design" Baker FG Gas Trucks, for example, you get an integrated power train, consisting of drive axle, transmission and clutch, selected and engineered to be the best possible unit to perform its required function. Features include: compact rigid construction without troublesome universal joints, split clutch housing for easy accessibility, and *single oil supply for entire assembly.*

"Balanced Design" also assures you that the power plant is not merely an automotive engine modified for truck use. It is a heavy-duty industrial engine specially engineered for rugged industrial truck service and built by an outstanding manufacturer. Our specifications call for moving parts to balance much closer than ordinary engine parts: pistons balanced to ± grams instead of ounces, crankshaft to 4 inch-ounces and connecting rods to 2 grams.

These are some of the reasons why Baker "FG" is the only gas fork truck with a full 6 months' warranty, and why we say "BALANCED DESIGN" makes it the best.

Baker "FG" gas fork trucks are available with 3,000, 4,000, 5,000 and 6,000 pound capacities. Specific bulletins can be obtained by writing The Baker-Raulang Co., 1219 West 80th Street, Cleveland 2, Ohio.

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1. **LOWER INITIAL COST**—FG-40 (4000 lb.) $4295. Other models at proportionate savings.
2. **LONGER WARRANTY PERIOD**—Baker quality permits full 6 months warranty.
3. **HIGHER LIFT**—Mast design allows higher standard lift than ordinary trucks.
4. **LOWER MAINTENANCE COSTS**—Designed for easier and less frequent servicing.
5. **MORE MANEUVERABLE**—Short turning radius cuts aisle width, adds floor space.
6. **EASIER TO OPERATE**—Greater visibility . . . easy-to-work controls.
7. **GREATER STABILITY**—Lower center of gravity, higher "stability factor" ratio.
8. **BETTER BRAKING**—Full floating, self-equalizing, self-energizing brakes.

Baker
HANDLING EQUIPMENT

805

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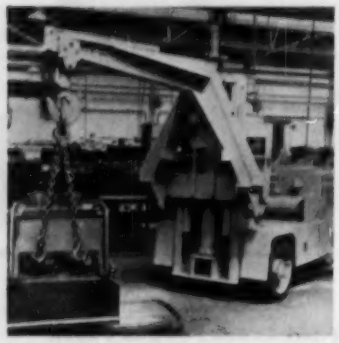
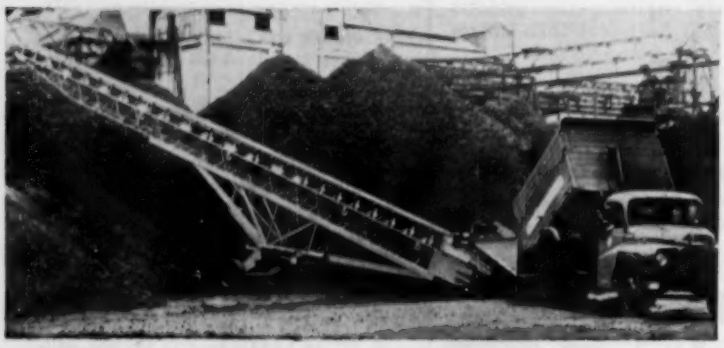
HYDRAULIC PLATFORM raises two men up to heights of 40 feet for maintenance and other work.



FORK TRUCK with crane jib attachment is only five feet wide, has a capacity of 12,000 pounds.



COMBINATION LOADER AND CONVEYOR stacks coke to a height of 30 feet, eliminates stockpiling of bulk materials with shovel or grab.

Cost-Conscious Manufacturers At British Industries Fair

By Ian M. Leslie
Editor, *The Builder*, London

SHORTAGE of labor and increasing wage rates point with emphasis to mechanical handling as a means of controlling costs. The heavy engineering section of the British Industries Fair recently held in Birmingham, England, saw a significant increase in the variety of the machines on show for this purpose—among them powered vehicles, various forms of loaders and pumping systems for handling dry materials.

Trucks with capacity to raise weights of eight tons up to 20 feet have many uses in contractors' and timber yards. Much interest was shown by Fair visitors in a smaller type, the *Freightlifter* five-ton fork truck, made by Shelvoke and Drewry Ltd. Only five feet wide, this truck is primarily designed for operation within industrial premises. Steering is mechanically assisted and full lock can be applied whether the truck is moving or stationary.

Although the rated capacity of this truck is 12,000 pounds, it can be used to overcome the problem of lifting loads of up to three tons at a considerably greater distance than has formerly been possible with small capacity models.

New at the Fair was a *Pyramid* truck, having a hydraulically elevated stillage platform which is raised by a foot-operated hydraulic pump through the medium of a copper-pipe and high-pressure flexible hose. A single tired wheel is fitted at the front and two tired wheels at the back. The chassis is built up from heavy gauge channel section steel, and a cowled engine is available as an optional extra. The power unit is a *Villiers Mark* 12 1¼ horsepower petrol engine with three-speed gear box. Manufacturer: Excelsior Motor Co. Ltd.

Mechanical handling in a different category—enabling men to put themselves and their tackle into a variety of overhead positions up to heights of more than 40 feet also was demonstrated at the Fair. The machine has been designed for jobs which either could not be reached at all or only by means of ladders or scaffolding.

This hydraulic platform has no power take-off or other connection with the chassis on which it is mounted, and all movements are controlled from the platform, leaving the operator's hands free. The machine can be mounted on any chassis of three tons or over with twin rear wheels or on suitable types of road trailer, railway truck, barge or pontoon. It has been fully tested by the manufacturer, Simon Hydraulic Machinery.

A useful device for loading and off-loading drums and casks was shown by Felco Hoists Ltd. This is the quick-lift hydraulic truck

(Continued on page 132)

FACTS ABOUT Exide®

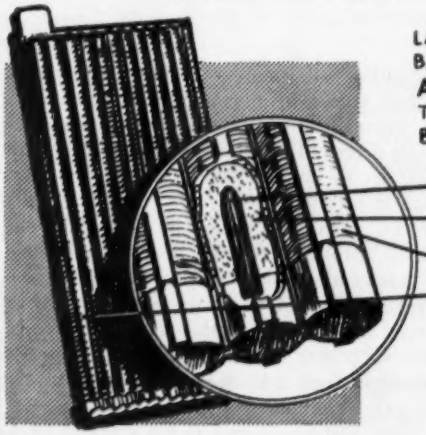
IRONCLAD® INDUSTRIAL TRUCK BATTERIES

GET MORE LIFTS EACH SHIFT ...WITH LOW COST EXIDE IRONCLAD POWER!

RAPID, ACCURATE HANDLING, PRECISE SPOTTING ARE MAJOR COST SAVING ADVANTAGES OF USING EXIDE-POWERED LIFT TRUCKS. THEY RESPOND INSTANTLY TO ANY POWER NEED. THE LARGE RESERVE POWER OF EXIDE-IRONCLADS KEEPS TRUCKS WORKING FULL SHIFTS... WITH NO COSTLY UNSCHEDULED DOWN TIME!

BATTERIES ARE WORKED TO DEATH BY EXIDE ENGINEERS TO LEARN SECRETS OF LONGER LIFE

SINCE 1910, RESEARCHERS HAVE GREATLY IMPROVED EXIDE-IRONCLAD PERFORMANCE AND USEFUL WORKING LIFE, BUT THE BASIC IRONCLAD PRINCIPLE OF TUBULAR CONSTRUCTION REMAINS THE SAME.



LAB TESTS OF IRONCLADS AGAINST CONVENTIONAL TYPES OF BATTERIES SHOW THAT THEY GIVE BETTER PERFORMANCE... AND FROM 20% TO 30% LONGER LIFE! THESE TWO FACTS, DEMONSTRATED BY THOUSANDS OF BATTERY USERS, ARE THE REASON WHY...

- PROTECTED CONDUCTING GRID
- COMPRESSED ACTIVE MATERIAL
- SLOTTED RETAINER TUBE
- IRONCLAD POSITIVE PLATE

EXIDE-IRONCLADS ARE YOUR BEST POWER BUY **AT ANY PRICE!**

LET EXIDE HELP SOLVE YOUR INDUSTRIAL TRUCK BATTERY PROBLEMS ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS ❷ WRITE FOR FORM 1982, A MANUAL ON INSTALLING AND MAINTAINING MOTIVE POWER BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

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Fork Truck Productivity Doubled

TOP: With forks secured to brace, out of way, boom and hooks unload two drums of oil simultaneously.

RIGHT: Grabs take drums of parts from storage for travel to shop. Each drum load may weigh 1000 lbs.

LEFT: With forks in normal position, trucks tier, carry such loads as 500 lb. capacity stacking boxes.

At least six operational gains have resulted from the use of specially equipped fork trucks at the plant of Karl Liberknecht, Inc., Lauerdale, Penna., manufacturers of machinery for knitting hosiery. These are, basically:

1. Time saved in practically every operation can be measured in hours per shift.

2. Much needed speed has been achieved in unloading vehicles and moving parts from the receiving station (or storage) to the machine shop.

3. Savings in man-hours in all handling operations have been more than substantial.

4. The storage area can now be used to full capacity.

5. Production control and inventory functions have been made considerably more reliable.

6. Breakage in the handling of parts has been substantially reduced.

Great versatility was given to the firm's two, newly purchased fork trucks by the addition to each of a boom and drum handling clamps and hooks. The clamps handle drums of parts vertically; the hooks lift unopened oil drums horizontally.

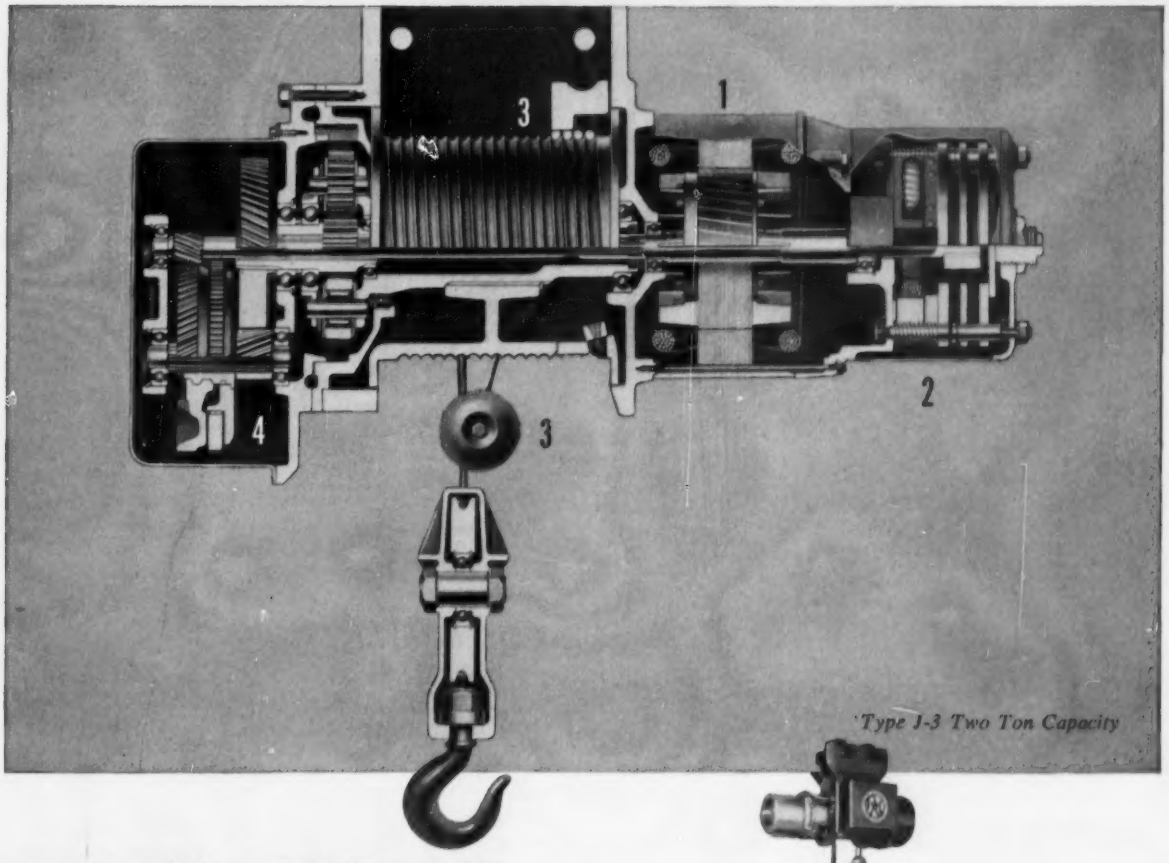
And since it is often necessary to switch rapidly from the forks, (used to handle bulk materials) one of these boom arrangements, the firm designed and installed a brace which holds the forks out of the way.

The major problem of the plant was the need to speed castings and parts from the unloading area to the machine shop 400 feet distant. Formerly, parts ranging in weight from a fraction of an ounce to 420 pounds per unit were unloaded, stored in an open lot, loaded on carts, and transferred to the machine shop.

Other uses for the fork trucks are shown in the following resume of operations.

(Continued on page 124)

TAKE IT UP WITH R&M HOISTS-CRANES-WINCHES



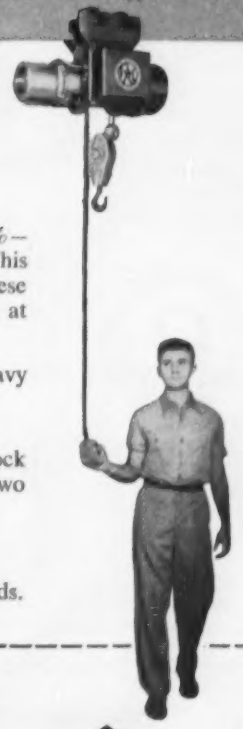
Type J-3 Two Ton Capacity

BIGGER LOADS: FASTER PACE

A JOB FOR THE J-3: While today's bulk loads often weigh more—by 25% to 50%—they must be lifted, moved, and spotted more quickly than yesterday's. This is a job for Robbins & Myers J-3 two-ton electric hoists, which meet these conditions, offering long life, high performance, low operating cost—and at low first cost:

1. **MOTOR**	2 HP Robbins & Myers, fully enclosed, 30-minute heavy duty rating—built exclusively for hoist duty.
2. **MOTOR BRAKE**	Oversize, magnetic disc type—stops load without drift.
3. **LIMIT SWITCHES**	Upper and lower—positively prevent over-travel of block for extra safety, lower limit switch stops hoist with two wraps of cable still snubbed on the drum.
4. **LOAD BRAKE**	Self-adjusting, Weston type—operates in oil bath.

Other R & M Hoists and Cranes available in ratings from 500 to 20,000 pounds.



Bring your R & M hoist data files up to date. Send for free bulletin.

☐ Send Bulletin No. 890 ☐ Have Representative call

ROBBINS & MYERS INC.

VENTILATORS MOYNO PUMPS HOISTS CRANES MOTORS FANS

SPRINGFIELD, OHIO BRANTFORD, ONTARIO

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Look! No Hands!

R-W Electrical Industrial Door Operators work easy as pointing a finger... automatically!

You don't pay a penny *extra* for the trouble-free dependability designed and built into every R-W electrical door operator. Like magic, Richards-Wilcox operators open and close swinging . . . sliding . . . folding doors, singly or in pairs, *automatically*—regardless of size or weight.

But there are *other* advantages too: valuable savings in time as products move from department to department within your plant; greater efficiency and safety since no manual operation is necessary—cable switches, push buttons or radio, magnets or electric eyes see to that! Because doors are tightly shut when not in use, heating and humidity-control costs are also substantially reduced.

Find out how *you* can profit with R-W Automatic Electrical Industrial Door Operators in your plant. For complete details, write today for Catalog No. A-87. No obligation, of course.

R-W equipment sets the standard for every industrial door need

R-W Fire Doors, Hardware and Accessories . . . are Underwriter's and Factory Mutual Laboratories Approved for all Class A-B-C-D-E and F openings, in a wide variety of constructions including flat surface, all-steel and corrugated sheet metal. Sliding, hinged or vertical doors with flat or round track, single or double-link hardware.

R-W Track, Hangers and Industrial Door Hardware are manufactured with precision and care—to give you the ultimate in quality and service. Ask about R-W "Lock-Joint" tracks and hangers for sliding doors . . . R-W hardware for swinging, folding or overhead doors . . . for all types of industrial doors weighing up to 3000 pounds each.

75 YEARS of QUALITY and SERVICE by RICHARDS WILCOX AURORA ILLINOIS

SLIDING DOOR HANGERS & TRACK • FIRE DOORS & FIXTURES • GARAGE DOORS & EQUIPMENT • INDUSTRIAL CONVEYORS & CRANES • SCHOOL WARDROBES & PARTITIONS •

Richards-Wilcox Mfg. Co.
"A HANGER FOR ANY DOOR THAT SLIDES"
AURORA, ILLINOIS, U. S. A.

Branches in Principal Cities
420 W. THIRD STREET, AURORA, ILLINOIS

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(*Continued from page 79*)

tures. The propane-fueled industrial truck not only has proven superior in every operation it has been set to perform where previously gasoline equipment was used, but is working in areas where gasoline would be intolerable because of air contamination by toxic exhaust gases and where severity of operation resulted in prohibitive engine maintenance costs and downtime delays.

Comparative fuel consumption. There are several reasons why propane will out-perform gasoline on a per-gallon basis. The lift truck operation is unique as compared to other automotive type operations in that the lift truck generally is working in rather confined areas where extreme idling-acceleration and stopping is necessary. To accomplish smooth idling and acceleration, gasoline equipment incorporates an over-enriched fuel curve or an accelerating pump. This over-enrichment on road type gasoline-powered trucks may contribute to 10 percent of fuel consumption. This 10 percent figure is then multiplied many times by comparison with the generally erratic lift truck operation. Propane lift trucks should have a near flat fuel curve which greatly increases economy, yet sustains performance.

Longer oil life. When propane is used as a fuel, further savings may be realized by the greatly increased life of oil and the reduction of actual oil consumption. The reason for this is substantiated by realizing that gasoline, when it enters the intake manifold and cylinder, for the most part is only atomized into small particles. In this semi-liquid condition, oil dilution, cylinder wall washdown and crank case contamination occur. This washing of lubrication from moving parts results in excessive engine wear, particularly on cold starts and initial running.

Maintenance. Maintenance costs and resulting downtime delays existing with gasoline equipment are of major importance in

Proof of LIMA Quality

A LIMA Type 34, one of three owned by the Philadelphia Electric Company loads slag at its Barbadoes Power Station. The other LIMAS operate at the Southwark and Cromby Stations. All three are used for a wide variety of materials handling jobs.

Philadelphia Electric Company gets . . . Maximum flexibility, low maintenance, high availability with 3 LIMA wagon cranes

Philadelphia Electric Company relies on Lima wagon cranes at three locations for materials handling flexibility. Locomotive cranes had proved too restricted since they could be used only where track had been laid. A wagon-mounted Lima Type 34 solved the problem so well that two additional Limas were placed in service.

Philadelphia Electric picked the Lima 34 because its rated capacity fitted their needs to a tee . . . and it really operates at rated capacity, too. What's more, the original Lima has been operating constantly since late 1950 with minimum maintenance downtime. The two newer Type 34's match that record. All three Lima cranes provide peak performance with maximum flexibility, low maintenance and high availability.

Lima wagon cranes give Philadelphia Electric real materials handling flexibility. They can be moved quickly to any spot where they're needed. With a fast switch from clamshell to hook on the front end, they can handle anything from the loading of slag (pictured) or ashes to lifting bushings from transformers during repair work.

It will pay *you* to investigate the benefits *you'll* get when you use Lima cranes—wagon, truck or crawler mounted—for your heavy materials handling jobs. Check today with your nearby Lima distributor . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

BALDWIN BLH LIMA-HAMILTON

LIMA SHOVELS · CRANES · DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division · LIMA · OHIO · U. S. A.

CM HOISTS

Are you wasting OVERHEAD plant space?

It costs money to light, heat and shelter overhead plant space. Get a return on your investment. Use this space to move or store materials with CM Hoists. You'll have more valuable floor space for other operations.

A favorite with production men

CM METEOR

WIRE ROPE ELECTRIC HOISTS

Capacities: ½ to 5 tons

- Designed for continuous duty. Airplane type cooling. Thermal protection for motor.
- Compact, enclosed construction. Operates under dusty, moist, steam or acid fume conditions.
- Balanced design. Low headroom.
- Only 110 volts at push button control. Safety type hook blocks.
- Precision bearings. Helical gears.
- Long life with minimum maintenance.

● METEOR Catalog 142 . . . shows all details of hoist suspension, operation and construction. Request one today for your file.

ALSO . . . Comet Electric Hoists (⅛ to 2 tons), Cyclone Hand Hoists (¼ to 10 tons), CM Pullers (¾ to 6 tons), CM Trolleys and CM Cranes.

➡ **Call the CM distributor for catalogs, prices and quick delivery from stock**

CM HOISTS AND CHAIN

CHISHOLM-MOORE HOIST DIVISION

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evaluating conversion to propane. The actual conversion cost and capital investment in storage facilities of one type or another must also be accounted for. Without exception, maintenance costs will be drastically reduced. This fact is substantiated by actual maintenance reports from many fleet operations. Savings as reported range from 40 to 80 percent. These savings may be directly attributed to the efficiency at which propane burns and the purity of the product itself.

Carbon monoxide. Actually, with the introduction of propane, we are correcting the problem at its source, in utilizing a fuel that is completely homogeneous with air. A high carbon monoxide content in exhaust is an indication of incomplete combustion, generally caused by an unbalanced air/fuel ratio, or the lack of oxygen in the final stages of combustion. Acknowledging that gasoline is only atomized in carbureted air, it is obvious that air and gasoline rarely combine to form a completely combustible mixture.

Propane is only stored in a liquid state; its introduction to an engine is always in a gaseous form. As a gas, propane may combine with air to form a theoretically perfect combustible mixture.

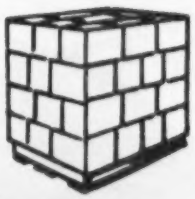
Safety and fuel handling procedures. By actual experience, propane has proven to be a far safer fuel than its predecessor, gasoline. Statistics show that more than 50 percent of fires involving industrial trucks have resulted from gasoline spillage during refueling.

STORAGE SPACE LAYOUT

By Andrew J. Briggs
Bureau of Supplies & Accounts
U. S. Navy

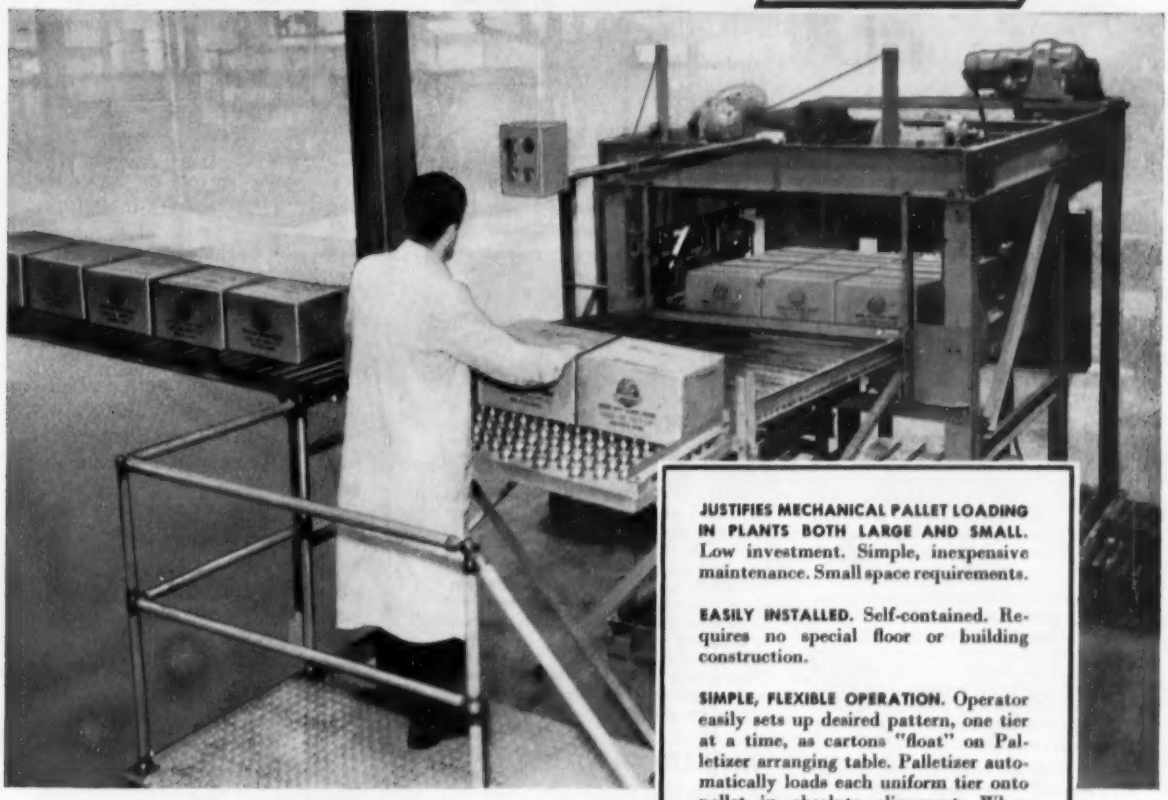
A study of the philosophy of storage discloses its importance to industry. Specifically: Assemblation of materials in a geographic-

PRESENTING a major advance in fast, safe, economical pallet loading with the



*Palletizer**

LOADING MACHINE by GREER



JUSTIFIES MECHANICAL PALLET LOADING IN PLANTS BOTH LARGE AND SMALL. Low investment. Simple, inexpensive maintenance. Small space requirements.

EASILY INSTALLED. Self-contained. Requires no special floor or building construction.

SIMPLE, FLEXIBLE OPERATION. Operator easily sets up desired pattern, one tier at a time, as cartons "float" on Palletizer arranging table. Palletizer automatically loads each uniform tier onto pallet in absolute alignment. When pre-set number of tiers is reached, loaded pallet automatically discharges and new pallet rolls into loading position.

Number and variation of patterns unlimited. Change patterns and loading rate at will. Adjustable to any standard-size pallet.

HANDLES CORRUGATED CARTONS AND WOODEN BOXES OF ALL TYPES . . . including open-type cases, reusable cases, bottler's cases, stubbies, and others. Also handles unglued flaps.

Now, one man and a Palletizer by Greer can pallet load up to three or more times as many cartons or packages as possible by manual methods alone. Minimizes fatigue — no lifting or stooping. Reduces damage to packages and contents through less handling.

Write today for helpful, informative bulletin and name of your local Palletizer dealer.

J. W. GREER COMPANY

Wilmington, Massachusetts.

PALLETIZERS are sold and serviced by authorized dealers throughout the U.S. and Canada

*Trademark

Patent Applied For

GREER

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One truck does the work of many!

THE BROOKS **LOAD LUGGER**®

picks up hauls dumps puts down

WHAT IT IS

The BROOKS LOAD LUGGER is a flat-bed truck body with a pair of hydraulic-powered hoisting arms, which is mounted on any truck chassis of suitable capacity. Standard models lift pay loads of up to 18,000 pounds at a time. Some special-purpose models lift much heavier pay loads.

LOAD LUGGER CONTAINERS are patented, tilt-dumping containers with deep, leak-proof bottoms. Capacities range from 1½ to 14 cubic yards for standard models. Some special-purpose models are much larger. A variety of open and closed containers handle solid materials, powders, sludge, liquids, and gases. Special pallets handle free-standing and unit-packaged materials.

Controlled by the driver from his cab, the truck-mounted Brooks Load Lugger lifts a Load Lugger Container onto its steel deck, carries it well forward for correct load distribution, cradles it between steel sidewalls for travel safety, hauls it away, dumps or spreads its contents, then returns the container and puts it down.

HOW IT IS USED

The LOAD LUGGER SYSTEM of materials handling calls for a number of Load Lugger Containers to be placed at points of need. These containers collect material as it accumulates, which reduces handling and eliminates loading crews. Then, loaded containers are picked up, hauled away, dumped, and returned on a regular schedule by a truck-mounted Brooks Load Lugger, which replaces many conventional trucks and eliminates loading time formerly required.

WHO USES IT

Industrial operations all over the country (quarries, foundries, steel mills, paper mills, refineries, chemical plants, brick plants, metal fabricators, etc.) use this versatile equipment to handle raw materials, finished products, and waste materials. Contract haulers of wet and dry refuse prefer Load Lugger equipment, as do scrap metal dealers, construction contractors, cemetery operators, and sugar cane growers. Government approval is evidenced by the many municipal, state, and federal installations. New uses and new users, such as cable reel handling by power and telephone companies, are constantly coming into the picture.

WHY THEY LIKE IT

The Brooks Load Lugger has no cumbersome superstructure or extra operating gadgets because of its patented simplicity, clean design, and sturdy construction. This results in a lower first cost, lower maintenance costs, the ability to carry more pay load on a given truck chassis, and a clear deck for multipurpose use. Its double-acting hydraulic cylinders, four-point container suspension, secure container cradling, and fully controlled tilt dumping are important contributions toward greater operational safety.

Load Lugger Containers are job-designed and job-proved. They are low and easy to load to full rated capacity. They dump clean because they are tilt-dumping, and they have no bottom openings to allow messy or insanitary leakage. Appropriate models are dust-proof, rat-proof, fly-proof, and almost odor-proof.

BROOKS EQUIPMENT & MFG. CO. 2031 DAVENPORT ROAD KNOXVILLE, TENNESSEE

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Continued

ally strategic position for reduction of transportation costs and expeditious delivery; economically, storage of materials during time of plenty for availability in times that are lean; functionally, as a means of preservation and storage of supplies to answer continued needs, to meet the emergencies of seasonal requirements and to offer variety regardless of season or time; esthetically, as a storage of spiritual and comfort creating needs; diversity, to store and hence provide variation which eliminates monotony and creates stimuli.

In a study of the storage program, there are many functions we have to do. Most of these functions are not pertinent to an intelligent storage operation; they were merely matters thought important. There were others that were given consideration and effort without helping the storage layout. A complete study revealed that there were only four important items to give any consideration in laying out stock in any kind of operation.

The first item to think about is *Similarity*. The things that are similar should be kept in the same place. For instance, all the hardware stock should be kept in one area and, within the hardware group, all the door parts should be kept in one area. Similarity is important because orders cover one kind of material generally, and as a result, the shipping papers are prepared for that group of material and are delivered to one place. This makes breakout easy.

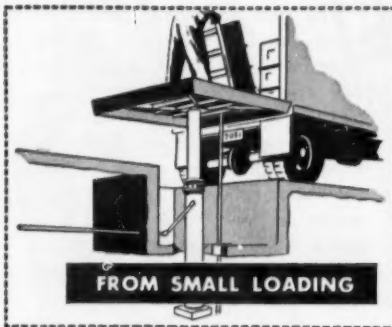
The next important characteristic and one that was given little or no consideration for many, many years, is the *Popularity* of the item and, in turn, a group of items. A standard method was to place the material in sequence. If a popular item fell at the end of the aisle or warehouse, that is where it fell and it was necessary to walk to that place each time an issue was required, regardless of the distance.

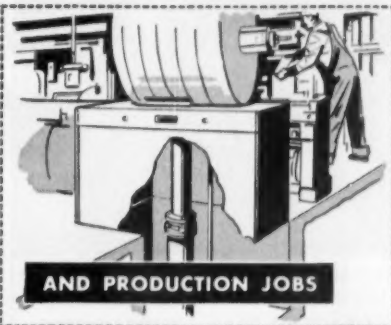
The next important consideration is *Size*. Here we refer to the physical aspects of the item. Is it

wherever the need...
whatever the size...

GLOBE OiLIFTS

QUICKLY INSTALLED...QUICKLY RETURN THEIR COST!

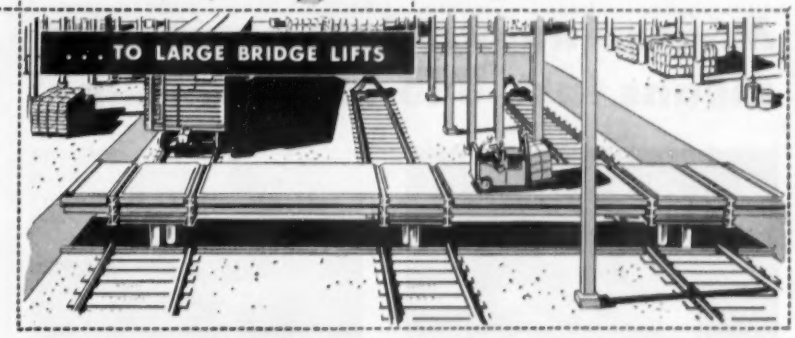




TO LOAD MACHINES
(*Left*) Globe OiLIFTS position bulky materials to speed production of machines and processes.

TO CROSS A DEPRESSED AREA
(*Below*) Synchronized hydraulic cylinders raise giant Globe bridge lifts from railroad track level to loading dock height, permitting two-lane traffic of heavily loaded fork trucks.

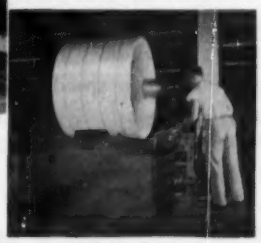
TO LOAD TRUCKS
(*Above*) Where no loading platforms are available, Globe OiLIFTS quickly raise heavy loads to truck bed level. In "down" position, platforms are flush with floor, permitting free cross travel of men and vehicles.



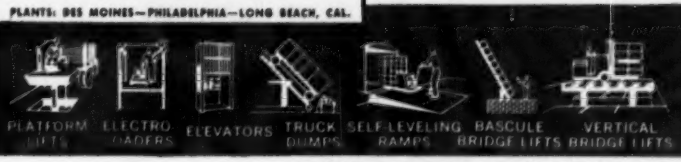
Whether the load is 1,000 lbs., or 50,000 lbs. . . . whether the lift is a few inches or 50 ft. . . . the Globe OiLIFT which does the job is assembled with standard production line components. Oil-hydraulic cylinders, platforms, power units and control systems are available . . . stress and performance tested . . . for initial low cost, early shipment and quick installation.

So, whether you want to cut costs in truck loading, eliminate the hazards of a ramp, route traffic across recessed railroad tracks, or any of countless lifting or materials handling operations, there's a readily-available OiLIFT to do the job.

The free book: "Case Studies in Modern Lifting" tells what other firms in *your* industry are doing to speed lifting work and cut costs. Write for your copy today.



GLOBE
OiLIFTS
PLANTS: DES MOINES—PHILADELPHIA—LONG BEACH, CAL.



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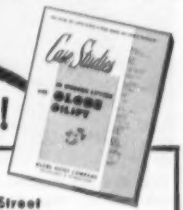

GLOBE HOIST COMPANY
East Mermaid Lane at Queen Street
Philadelphia 18, Pennsylvania

Please send me additional information on Globe OiLIFTS as described in the FREE booklet "Case Studies in Modern Lifting."

Name.....
Company.....
Address.....
City..... State.....

F-705-PL

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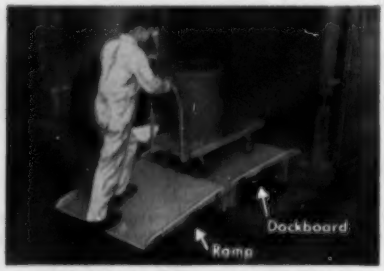
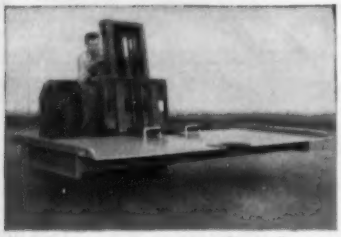
Notice ease with which worker handles this 48" x 60" Magcoa Dockboard.

Magcoa magnesium equipment means fast, one-man handling!



Low dock, high truck . . . requiring a long, easy slope. Magcoa solves it easily with a combination consisting of a Ramp section and a Dockboard section. And each section can be moved by one man. If it had been built as a one-piece unit, it would have been difficult. This way, it's easy . . . and safe.



On big, big ones, like this 90" x 54" Dockboard for use with double-door railroad cars, Magcoa installs retractable lift truck handles . . . however, despite the bulk, final positioning and up-ending can be done manually by one man.

Even the big Magcoa Yard Ramp for trailer and rail loading from ground level can be moved and positioned by one man. Whatever your loading problem, you can count on Magcoa to help you solve it.

What's your problem?

Use the handy coupon to get free literature showing how Magcoa light-weight, heavy-duty magnesium equipment can speed your loading and unloading . . . cut your handling costs . . . and improve your safety record.

MAGNESIUM COMPANY OF AMERICA
Materials Handling Division
EAST CHICAGO 1, INDIANA
Representatives in Principal Cities

☐ Please send Dockboard literature.
☐ Please send Yard Ramp literature.
CLIP THIS COUPON to your business letterhead, print your name clearly, and mail today to Magnesium Company of America, Materials Handling Division, East Chicago 1, Ind.

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CONFERENCE

Continued

large as a unit or is it small? Important, too, is volume size. Does a lot of small material make a big item, or does our total stock of the item, no matter how many units we have, still add up to only a small quantity from a size point of view.

The next important item concerns the *Characteristics* of the material to be stored. This is the one area where the greatest attention is being given throughout storage operations. Everyone knows, without any question, that the butter should be in the refrigerator and paint in a special fireproof building, and the critical and valuable items in lock-up cages.

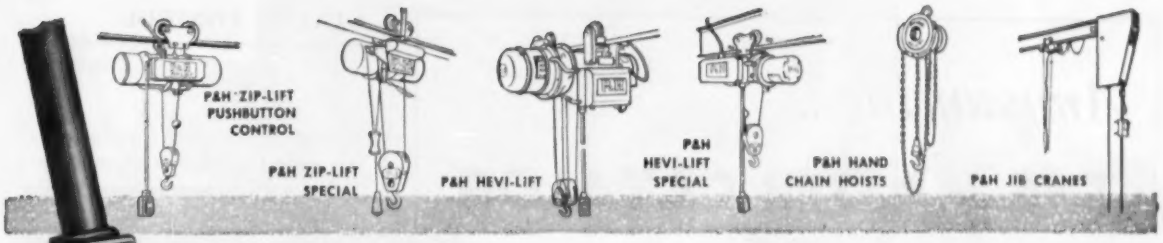
QUALITY CONTROL . . .

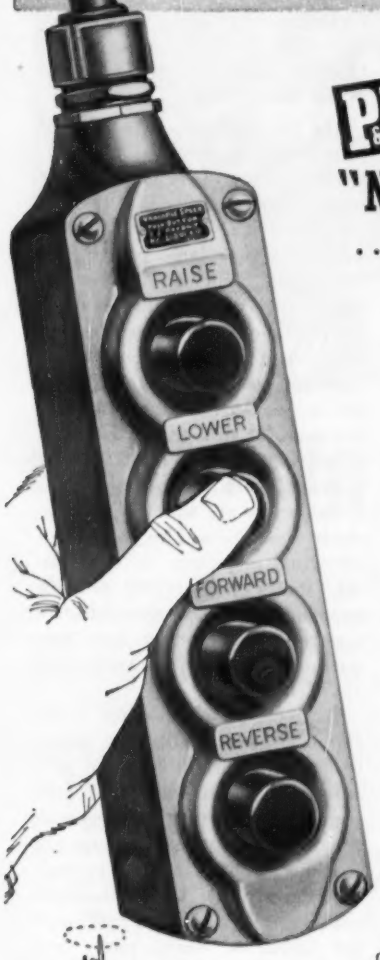
(*Continued from page* 82)

overhead monorail that passes between banks of eighty multi-spindle automatics. Operators stack their work in metal tote pans, with tickets attached showing the piece number, quantity, machine number and his clock number. The pans go on the conveyor, as they are filled for transportation to a sampling inspection area.

In this area samples of work are taken according to a table for this purpose, and the parts are checked dimensionally and visually. If more than a specified number of defectives are found in a sample, the entire pan of 30 to 600 pieces is inspected; if less than the allowable number of defectives is found, the entire pan of work is passed. Since these are not finished parts but must be hardened and ground, the sampling plan need not be a tight one. The result is that only about 3.5 percent of all the parts produced are actually inspected.

This overhead conveyor method of handling parts in process—used extensively in the automotive industry because it saves floor space for more valuable manufacturing



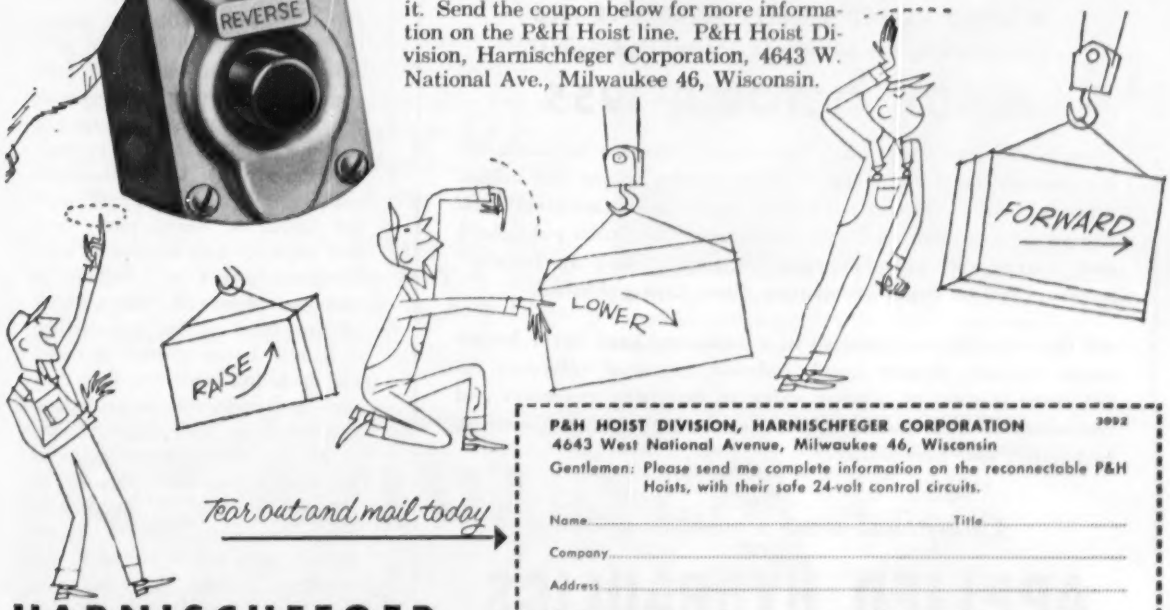


P&H 24-volt circuits guarantee: "No electrical danger to the operator!"

. . . and every P&H Hoist is easily reconnectable within the control box to 220 or 440 volts

If your hoists have to work in moist, humid atmospheres where the operator is constantly grounded, then a P&H Hoist is a natural for you. Only 24 volts travel into the push-button control station on these husky load-handlers — completely eliminate electrical danger to the operator. P&H engineers have cut both voltage and amperage way down in this simplified control system—you get *safer* hoisting — easier hoisting.

And what's more — you don't buy a one-voltage hoist when you choose a P&H. For every P&H is easily reconnectable within the control box — to 220 or 440 volt operation. It's a simple, quick operation that any workman can perform in ten minutes — and he doesn't have to tear the hoist apart to do it. Send the coupon below for more information on the P&H Hoist line. P&H Hoist Division, Harnischfeger Corporation, 4643 W. National Ave., Milwaukee 46, Wisconsin.



Tear out and mail today

P&H HOIST DIVISION, HARNISCHFEGER CORPORATION 3092
4643 West National Avenue, Milwaukee 46, Wisconsin

Gentlemen: Please send me complete information on the reconnectable P&H Hoists, with their safe 24-volt control circuits.

Name ..... Title .....

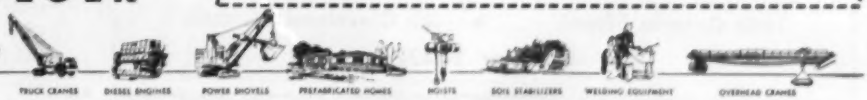
Company .....

Address .....

City ..... Zone ..... State .....

HARNISCHFEGER

the P&H *line*



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A LONG NEEDED MASTER REFERENCE FILE
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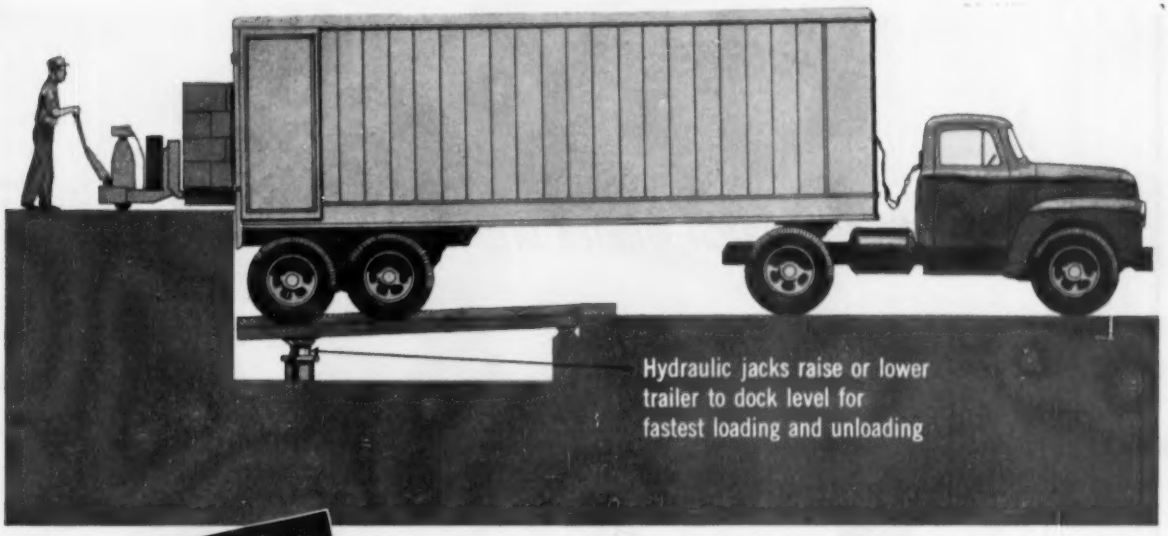
operations—is ideal from a quality control standpoint because the order of production is maintained, making it possible to spot quality control stations along its length.

Quality Control Starts With Receiving

The last application of material handling techniques to be considered here will be the one that really comes first in manufacturing—receiving inspection. In a well organized plant, quality control begins right at the receiving dock. All purchased material passes through an inspection area where it is sampled for conformance to specifications. Accepted lots are passed through to a storage area, or directly to the manufacturing floor; rejected lots are returned to the vendor; and questionable lots are shunted aside to await disposition. This method of receiving inspection is economical, forces vendors to produce good work, and prevents defective material from getting into production where it will cause trouble and delay.

In receiving inspection material is usually handled by power or manual trucks; with the general use of palletization today, fork trucks are a necessity. In general, the important considerations are that the handling methods be such that the material is not damaged, that there be a minimum of manual lifting of heavy parts, and that capacity and amount of handling equipment be adequate to eliminate delays including those of inspection as far as possible.

It must be recognized by material handling engineers that they play a definite part in protecting quality. It is their responsibility to be sure that parts or material be transported safely from one step to the next in processing. Much too often, conveyor-transported parts are damaged in the handling process. For example, they are dropped excessive distances into containers, causing nicking, which necessitates expensive repairs or, if not detected, causes operational difficulties.



New

ROTARY TRUCK LEVELER
makes big savings in loading costs

Takes no space. The Rotary Truck Leveler eliminates the need for ramps and dockboards and saves the space they require. It is installed in the driveway in front of the loading dock, leaving the dock platform completely free of obstructions.

Dual hydraulic jacks with 40,000-lbs. capacity raise or lower the truck or trailer to bring the bed level with the loading dock. Angle of incline between trailer bed and dock is reduced to a minimum . . . pallet trucks move in and out with maximum speed and safety. A raised center curb section provides fast, accurate truck positioning.

Operation is by economical, maintenance-free Rotary Oildraulic® electric power unit. Dependability assured by Rotary Lift Company's experience in building over 100,000 oil-hydraulic lifting devices.

For new or old buildings. The Rotary Truck Leveler is easily installed in any building. It is the ideal equipment for docks where construction or space limitations prevent use of ramps.

Rotary **TRUCK LEVELER**

Manufactured by
ROTARY LIFT CO., MEMPHIS 2, TENN.
Specialists in oil-hydraulic lifting devices.

MAIL COUPON FOR COMPLETE DATA

Rotary Lift Co.
1037 Kentucky
Memphis 2, Tenn.

Send complete data on the Rotary Truck Leveler to:

Name _____

Address _____

_____

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"Now, watch when I drop it..."

This is a customer's version
of our own "drop test."
Gives you an idea how your box
stands up in transit.

And if it doesn't, it's time to
talk to us. We make boxes that
don't do anything when you drop them...
except protect your product.
Ask us. We'll show you.

HINDE & DAUCH

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
12 FACTORIES • 40 SALES OFFICES

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PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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COLORS that roll on dry!

Seal, insulate, protect, and preserve; identify and code—these are among the hundreds of uses for "SCOTCH" Brand Plastic Tape No. 471. This versatile tape comes in eight vivid colors, plus transparent. It sticks at a touch to any clean, dry surface; is thin, tough, stretchy; is unaffected by acids, greases, salts, and most common commercial solvents; seals out moisture. For the complete story, write on your letterhead to Dept. CG-75.

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300 Pressure-Sensitive Tapes

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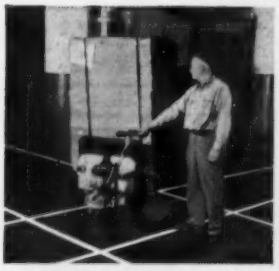
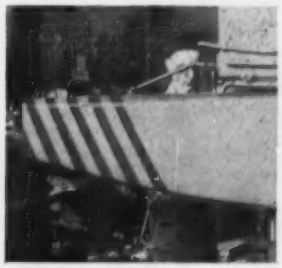
Look what you can do with it!



MARK LANES for traffic, define storage areas the fast *dry color* way with "SCOTCH" Brand Plastic Tapes. Tape is easily applied... ready for traffic immediately.

INDICATE corners, obstructions, emergency equipment with bright, easily seen markings of "SCOTCH" Plastic Tape. Tape sticks to any clean, dry surface.



WARNING SYMBOLS are easily made with "SCOTCH" Plastic Tapes. Eight colors let you "code" markings. Tape may be safely used near exposed electric terminals.

THIS FREE FOLDER describes "SCOTCH" Plastic Tapes in detail. Write on your letterhead: Dept. CG-75, Minnesota Mining and Mfg. Co., St. Paul 6, Minn.

The term "SCOTCH" is a registered trademark of Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.
Export Sales Office: 99 Park Ave., New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

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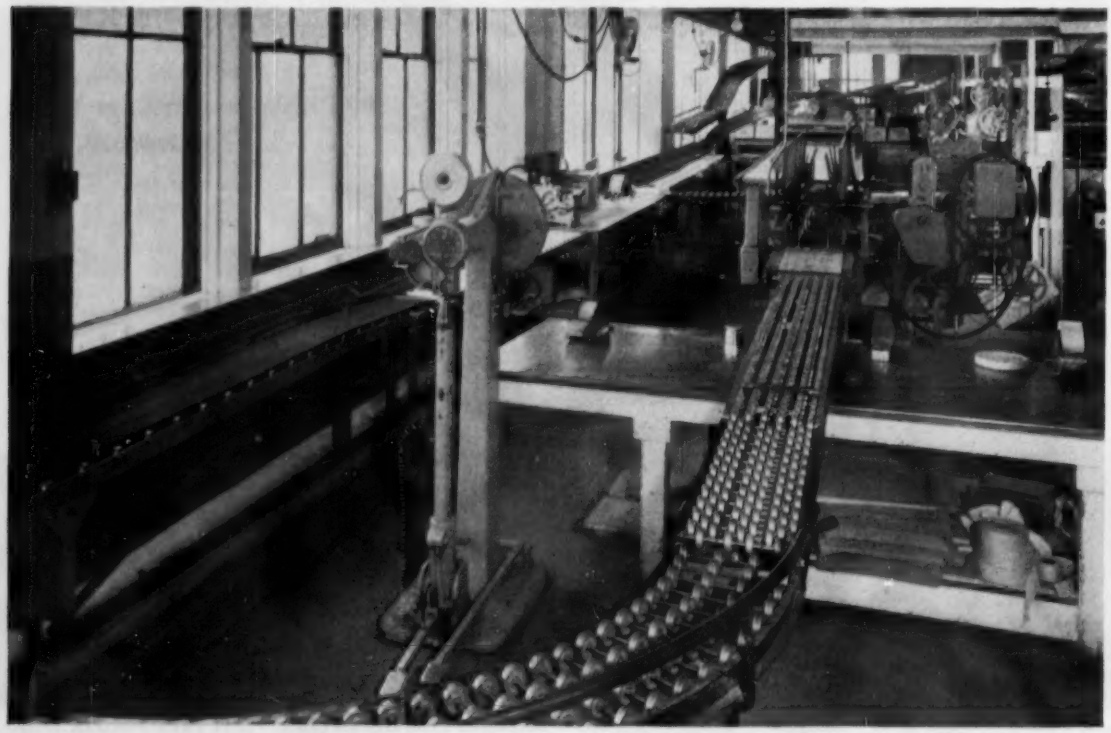
Conveyor System Designed for . . .

Continuous Flow in Packaging

A conveyor and spiral chute system at R. A. Johnston Co., Milwaukee, has reduced handling operations and saved hundreds of manhours in packaging and shipping activities. The company manufactures candies, biscuits and chocolate.

The new system comprises spiral chutes, belt, roller and wheel conveyors which link operations in the packaging rooms, storage rooms and shipping floor. The cookie and biscuit packaging rooms are located on the fourth floor of the company's plant while the shipping room is on the first floor.

Prior to the installation of the conveyor system, packaged goods had to be placed on hand trucks for handling about the packaging room, wheeled to the freight elevators, moved down to the first or shipping floor on the elevators and then re-handled from the hand-trucks for storage or shipment. Many hundreds of trips per day were made with the hand-trucks and



WHEEL AND BELT CONVEYORS at the Robert A. Johnston Co. link the packaging and wrapping machines to provide for continuous flow. Packaging rooms are located on the fourth floor of the plant and include "cold room" work as well as "normal room" work. Previously, aisles were cluttered and congested, and repeated handling of products and packages was necessary. As a result, damage rate and costs were excessive. Now, handling has been minimized and damages and accidents have been all but eliminated.

and Shipping

elevators. Both packaging and shipping rooms were cluttered and congested. Repeated handling of packages resulted in considerable breakage of containers as well as of packaged products.

Now, a single system links all packaging operations in the packaging room and, by means of the spiral chutes, provides direct continuous flow down to the shipping room. Manual handling has been reduced to a minimum . . . clutter and congestion have been eliminated . . . there is very little breakage of either the packages or their contents. Furthermore, the new system requires only about 1/3 of the previously used floor area.

In the Packaging Room

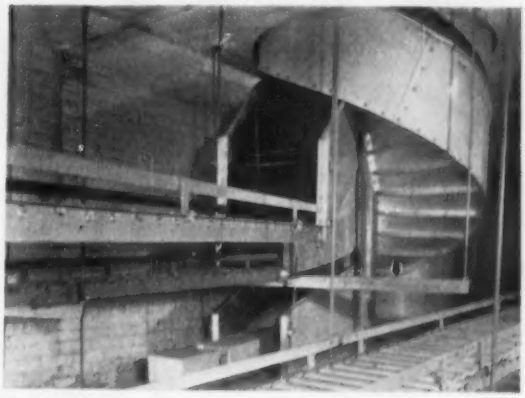
Packaging operations on the fourth floor include "cold" room work (where enrobed cookies are gathered and packed) and normal temperature room work (where other types of cookies and biscuits are packaged.) In the cold room, operations begin with the forming and make-up of trays and caddies at a central station. These trays and caddies are brought to the packaging table on conveyors. Belt conveyors alongside the gathering and packaging table convey filled trays and caddies to wrapping machines, from whence they are carried on roller conveyors to the spiral chutes for dispatch to the shipping room. The conveyor system has eliminated double handling of trays, caddies and cartons to and from the packaging room area.

In the biscuit and regular cookie packing room, wheel and belt conveyors provide direct linkage and handling between multiple wrapping and packing machines. Wrapped packages are conveyed directly from the machines to the spiral chutes for delivery to the shipping room.

On the first, or shipping room floor, the spiral chute, made up of three different loads, discharges directly onto roller conveyor discharge tables. From there, packages are stacked or placed on hand-trucks for shipping dispatch.

Photos courtesy Standard Conveyor Co.

WHEEL CONVEYORS lead from container make-up room to gathering and packing table. Belt conveyors have been placed on each side to carry filled packages of Johnston cookies and biscuits to sealers.



SPIRAL CHUTES lead from the fourth floor packaging room to the first floor shipping department. This is discharge point of chutes where packages pass onto roller conveyor leading to the shipping room tables.

SLIDES at end of roller conveyor lines deposit packages onto shipping tables. Packages are placed on hand-trucks for shipping dispatch or for stacking in temporary storage area located near by.

HEAT SEALING of foil-lined envelopes is made more efficient by good handling procedures at Aircraft Radio Corp. Sealed packages fall into tote box under sealer.

Good Handling Improves Packaging

. . . of delicate aircraft parts

MECHANIZATION of handling in certain packaging operations has enabled Aircraft Radio Corp., Boonton, New Jersey, to increase speeds by as much as 300 percent.

Electronic parts and accessories for the lines of radio communication and aircraft navigational equipment in which the company specializes require careful treatment. They must be packaged to withstand transportation shock, considerable handling and great variations in climatic conditions.

To solve these preservation problems, Aircraft Radio developed procedures for wrapping certain items in chemically neutral papers and then packaging them in hermetically sealed foil-lined envelopes. The selection of packaging materials was followed by a special study of the handling techniques in packaging. It was decided that the entire packaging material handling operation could be mechanized in a special packaging production unit quite apart from the regular shipping department. (It had formerly been an assembly line hand operation.)

The hermetical sealing phase of the packaging operation is built around the sealing machine. To feed packages to the unit, ARC engineers rigged up a belt conveyor line and work table arrangement which has room for six packagers in two groups.

The first packaging group wraps parts in neutral paper. Wrapped units then move along the conveyor to a second group where they are inserted into foil-lined envelopes.

A unique supporting bracket, constructed of angle iron and installed along the center of the moving belt, keeps envelopes in an upright position until they are picked up by the sealer. Completed packages are deposited into tote pans spotted under the discharge end of the sealing machine. Products are then ready for government contract spare parts storage or immediate shipment.

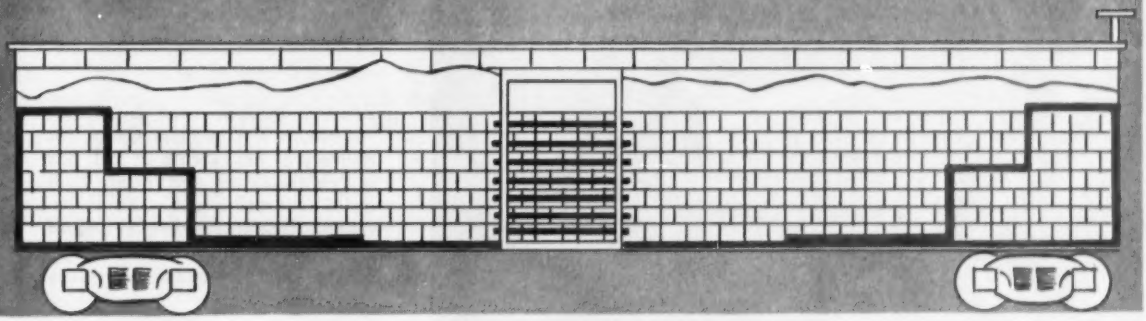
The company's attention to material handling and packaging detail and operating efficiency has paid dividends in better product protection, greater speeds and corresponding savings in handling costs.

Here's an Inside Tip:

Reduce Damage Claims

(By as much as 80%)

RETAIN WITH FIBREEN



GREY LINE IS FIBREEN RETAINER SHEET

Fibreen retained products stay safe and snug in transit — as a unit. Train jolting can't harm shipments because the Fibreen retainer sheet drawn taut keeps containers from being "pushed around" and smashed in end walls and voids. Result: Damage claims reduced as much as 80%!

Available in widths of 36″, 42″, 48″, 54″, 60″, 72″, 84″, and 96″ — in several grades including non-asphaltic varieties. Write for free samples and packaging information.

AS A PACKAGE — VERSATILE FIBREEN HAS MANY PROTECTIVE ADVANTAGES

- **Want to package odd shapes?** Flexible Fibreen fits around irregular contours (machinery, for instance). Saves packaging time and money.
- **Want to seal against dirt and moisture?** Furniture manufacturers find Fibreen gives air-tight protection — products arrive at destination clean and dry.
- **Tough Fibreen stands up against rough handling.** Fibreen withstands rips and punctures. It's reenforced with steel-like, cross-laid fibres.
- **Want lighter shipping weights — and costs?** Compare Fibreen!

SISALKRAFT PRODUCTS

AMERICAN SISALKRAFT CORPORATION
Dept. FL-7, Attleboro, Massachusetts

Please send free samples and packaging information on FIBREEN.

Name .....

Company .....

Address .....

City ..... *Zone* .... *State* .....

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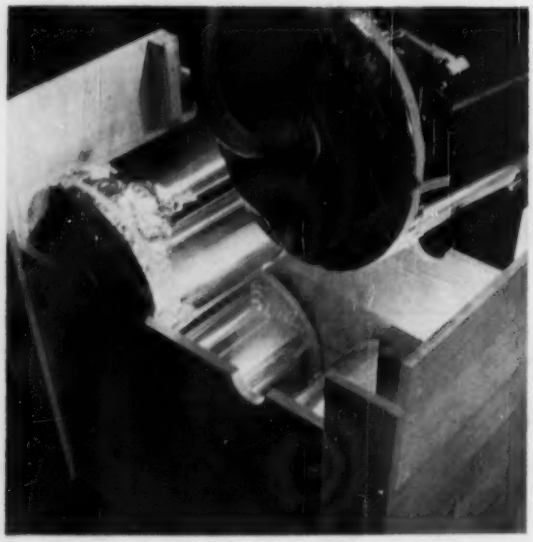
Unitizing

PALLET BOX is used by Kaiser Aluminum & Chemical Corp. for delivery of heavy coils of foil. Box is prefabricated and sides, built up as each coil is put in, act as retaining flanges. Padding at end of coil protects edges from damage.



INDIVIDUAL COILS are suspended away from each other by unique split-flange construction of side of box.

STEEL BANDS are applied to each unit load to provide support and protection against shock and vibration.

Method for Heavy Rolls

ALUMINUM foil for industrial and packaging uses is frequently given "kid glove" treatment to safeguard the ultra-thin metal in transit from producing mill to processer's warehouse.

Many special protective measures are taken in packaging and shipping foil at Kaiser Aluminum & Chemical Corporation's Permanente, California, foil mill to assure safe delivery.

Coils of finer gauge foil are so packaged that they "float free" of all contact with their container. Their steel or aluminum cores are suspended from split flanges in wooden skids and corrugated cardboard cases and heavy padding is attached to the core at each end.

As an additional precaution, containers are loaded aboard truck vans and railroad cars so that the coils ride thwartships. In this manner starting and stopping shocks are absorbed by the flanges and danger of the coils telescoping is minimized.

To streamline the flow of material from the plant and speed deliveries, the shipping and receiving department gears its operation closely to the foil processing schedule. When a foil order is ready for its first pass through rolling equipment a card giving width of foil, gauge, outside diameter of coils and type of core is sent to the box shop.

The containers, made to customer specifications, are then prepared to receive the finished foil as it comes from the mill. The department also receives a weekly production planning report as further assistance in programming its activities.

The direct mill-to-package procedure provides faster

(Continued on page 115)

UNIT LOADS are loaded onto vehicles so that coils ride thwartships. Thus, container sides absorb starting and stopping shocks and the danger of coils telescoping is minimized. Coils weigh as much as 1600 pounds.

Use of Pallets

from origin to destination*

by William H. Sardo, Jr.
Secretary-Manager
National Wooden Pallet Mfrs. Assn.

SINCE their advent, pallets have become increasingly important to industry in the movement of materials. They are used, not only in interplant operations and warehousing, but also in transporting products to the consumer.

World War II saw the pallet come into its own. Much credit for the widespread use of pallets today is due to the development of the fork truck. Over the past fifteen years, industry has come to recognize many of the savings possible through palletization, but, we wonder how many have taken the time to study the full savings possible by employment of pallets for all handlings from origin to destination.

There are many additional benefits to accrue to shipper, carrier, and receiver if palletized freight handling is adopted. We visualize the following benefits:

(1) Loading and unloading time of carriers' equipment would be cut at least 50%, thereby increasing availability for revenue miles.
(2) In the case of some commodities, one piece of equipment will be able to be loaded with the same number of items which would require two or three vehicle-loads, unpalletized.
(3) Utility of carriers' equipment would be increased.
(4) Damage claims would be reduced.
(5) The possibility of pilferage would be reduced because goods would be bonded in unitized pallet loads.
(6) Ventilation of merchandise during transit would be assured.
(7) Pallets would provide a natural sub-flooring to which strapping could be secured for anchoring loads in transit.
(8) Demurrage charges would be eliminated.

One might ask, "If the savings of palletized shipping are so evident, then why isn't this practice more universally used in industry?" The answer to this question lies in the fact that most common carriers have not seen fit to encourage the benefits of palletization from origin to destination. They have in a way handicapped this "through" concept of palletization by placing a penalty on it in the form of freight charges.

Under the various freight classifications, carriers have considered pallets as containers, assessing the same transportation charges on them as the goods which they transport. In most instances, the portion of the freight charged for the pallet has more than offset the savings to the shipper, and in such cases the carrier has failed to grant any allowance or consideration for the savings which it receives. In the past, a few commodities, because of their nature and the low-class rates applied to them by carriers, have been able to employ pallets for shipping purposes. We feel that this privilege belongs to all American shippers.

It is our opinion that the carriers erred originally in classifying pallets under the same rule as containers, because pallets are rightfully handling or car equipment. The flat pallet has never taken the place yet of a single container for shipping purposes. It is used to facilitate the handling of goods and their containers. As such, it should be entitled to the same "free" or dunnage allowance as is accorded such items as floor and meat racks in refrigerator cars, automobile parts racks and crates in freight cars, dunnage, cement tanks, coal hoppers, etc.

We contend that rates on palletized freight should be charged at the net weight of such shipments, excluding the weight of the pallets, and that some provision should be made for either the free or low-rate return of empty pallets to the point of origin.

Railroads in Canada, Switzerland, Germany, England, Sweden, Finland, and Holland have already granted some form of "free" allowances on ladened pallets and the "free" return of empty pallets. Each of these countries seems to have its own pet way of making these allowances, but the net result to the shipper is the same. Sweden adopted "free" pallet concessions in 1946-1947. Next to follow suit were the Dutch in 1948, and the Swiss Federal Railways in

*Condensation of address presented at the Material Handling Conference, sponsored by The American Material Handling Society and held concurrently with the National Material Handling Exposition, May 16-20.

1950-1951. German, British, and Finnish carriers took action in the latter part of 1953.

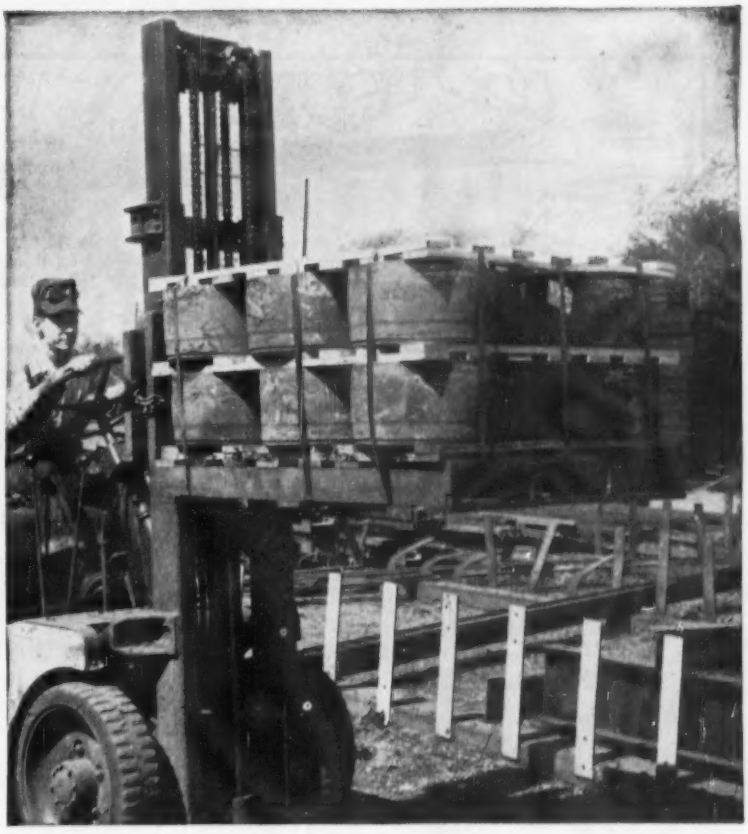
We have singled out the Swiss Federal Railways for detailed discussion because of the fact that they operate the world's first successful pallet pool, or pallet exchange system. To join the pool, shippers must provide their original supply of pallets, which have to be made to rigid specifications laid down by the Swiss Federal Railways. A written agreement in respect to palletization is entered into between the railway and its customers who wish to take part in the pallet exchange system. By joining the pool, the shipper is charged no freight on pallets upon which goods are loaded. In other words, freight charges are assessed only on the net weight of the shipment and its containers.

The Pool System

The pool system operates in the following manner. In exchange for an undamaged loaded pallet handed to the carrier for shipment, the railroad returns to the shipper an undamaged empty pallet. Likewise, when complete pallet loads are delivered to a receiver, he must return an equal number of undamaged empty pallets to the railroad. Shipper and receiver are required to check the condition of pallets handed to them by the carrier. Without advice to the contrary, it is assumed by the railroad that the pallets were in good condition upon delivery. Damaged pallets are repaired by the railroad if they are damaged while in transit on their line, pallets that are damaged in use by the shipper or receiver being repaired at their expense. The Swiss pallet pool is restricted to less carload shipments. No exchange system operates on carload movements of freight. Only "free" allowances on ladened pallets and "free" return of empty pallets belonging to the shipper is afforded carload traffic.

In the United States for some months now, there have been a number of examples of "free" or dunnage allowances granted by truck and water carriers in certain

(Continued on page 121)



Signode unitizing method speeds truck handling of heavy castings

A manufacturer in Alabama sought a safer, lower cost way to ship heavy-wheel castings by motor truck to Michigan. With the co-operation of Signode's fieldman, a special unitizing pallet pack was developed. First, a heavier, stronger pallet was built. Two layers of castings, separated by a wood frame, and similarly capped, were strapped to the pallet. Six bands of Signode steel strapping, spaced for maximum unitizing efficiency, were applied. The new method of shipping saved time in loading and unloading. Handling safety was greatly increased. Cost of the pallets was self-liquidating, because the receiver bought them for inplant handling and storing of castings, and for intraplant shipping.

Get in touch with your Signode Fieldman! He will be able to show you, too, how to make important savings in packaging, handling and shipping your products through the six basic unitizing methods. Quickest way to reach him is to write

SIGNODE Steel Strapping Co.

2618 N. Western Ave., Chicago 47, Ill.
Offices coast to coast—Foreign subsidiaries and distributors world-wide.
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Circle No. 140 on Reader Service Card for more information

CORRUGATED CONTAINERS, used by tropical fish grower in Miami, stack neatly and require less space than milk-type tin cans.

Shipping Live Fish In Corrugated Boxes

ADAPTABILITY of corrugated containers to the shipping of practically any type product is demonstrated by a new packaging method employed by Sunlan Aquatic Nurseries, Miami, Florida.

The tropical fish producer has discarded traditional "tins" for polyethylene-lined corrugated boxes. The tins, resembling flattened milk cans, weighed 25 to 30 pounds and carried 150 average-size fish. Consignees were required to pay one to two dollars for returning an empty.

The latest model corrugated box weighs considerably less than a can and carries 400 fish. Dimensions of the box are 15 x 28 x 6 inches.

Spoilage has been reduced to almost zero. An excellent comparison of the protective qualities of both types of containers was provided on a cold day last winter. A hand truck at Idelwild Airport broke down enroute from airplane to cargo shed. By the time a replacement truck was brought out, most of the fish in the cans were destroyed. Those in the boxes remained in good condition.

POLYETHELYNE liner fits into wax-lined corrugated box. Note side construction of box which provides air space and cushioning.

SHIPPING DEPARTMENT at Sunlan Aquatic Nurseries. Tropical fish are poured into corrugated boxes into which the liners were inserted.

MASTER CONTAINER receives two inner containers which contain live fish. Closed unit can be turned upside down without any spillage.

USS Gerrard ties ANYTHING you've ever seen

A fork lift truck drives right into the kiln, picks up the pallet and takes it to the railroad car or to the warehouse. No manual handling is necessary.

The 50-pound tuyeres are palletized right in the kiln. They are stacked 42 to a pallet, and bound with two loops of ¾" x .035" USS Gerrard Flat Steel Strapping.

"USS Gerrard Steel Strapping has saved money in loading, storage, breakage and man-hours not only for us but for our customers as well"

Says Climax Fire Brick Co. • Climax, Pennsylvania

In 1949 the Climax Fire Brick Company turned to USS Gerrard for the best method of handling and shipping odd-size fire bricks, known as tuyeres. Here are the results:

- By using USS Gerrard Flat Steel Strapping they reduced their shipping damage to *less than 1%!*
- Since they can safely stack the Gerrard-palletized tuyeres much higher, they have *increased their storage space by 33%!*
- Loading and moving the tuyeres by hand used to require 8 hours to fill a normal freight car with 2200 units. Using the Gerrard system, it now takes only 2 hours—*a savings of 75% in man-hours alone!*

The tuyeres are used exclusively in the Bessemer Furnace. When fitted together in the furnace, they form a series of continuous holes through which highly compressed air is forced into the molten steel for the purpose of blowing out impurities. Climax Company produces 60% of the nation's tuyere requirements.

It's time for you to try USS Gerrard Steel Strapping – both Round and Flat. Whatever your packaging-tying problem might be, our engineers can help you find the safest, most economical solution. Contact us at your convenience. Meantime, send for your free copy of the new GERRARD Blue Book of Packaging.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
General Offices: Chicago, Illinois

USS GERRARD
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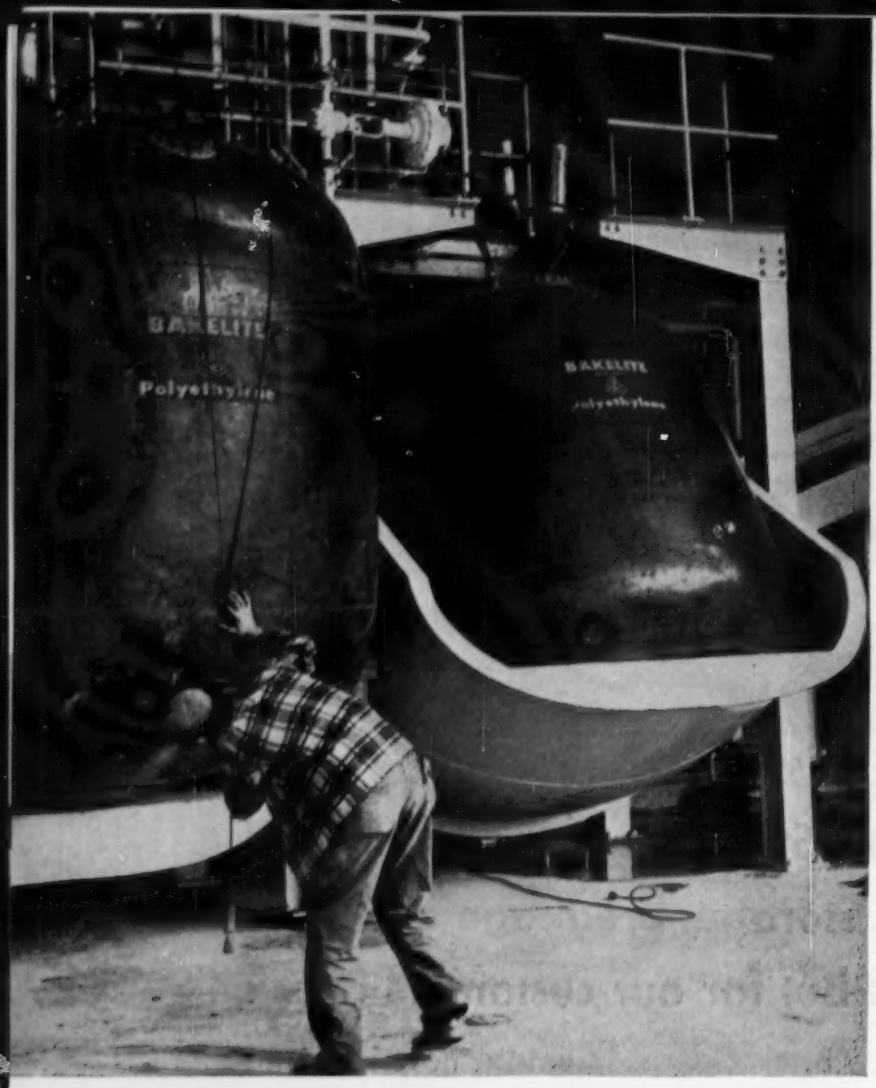

SYNTHETIC RUBBER containers, used by Bakelite Co., stand nearly eight feet high when they are inflated. A tilting cradle positions containers at a 45 degree angle.

KING-SIZE CONTAINERS

... for shipping bulk products

IMPORTANT savings for customers, higher product quality, increased handling efficiency and reductions in warehouse space requirements are among the more important benefits which have resulted from a new handling and distribution method employed by Bakelite Co. Products involved are Bakelite polyethylene resins which are shipped to fabricators throughout the country.

The system is designed around large synthetic rubber collapsible containers, each of which carries 9400 pounds of product. Nearly eight feet in height, they are completely air tight when closed.

The smoothness and efficiency of the system is seen in the record of a series of shipments from South Charleston, West Virginia and Ottawa, Illinois.

At South Charleston, empty, collapsed containers are stored outdoors, on the ground. When needed, a container is picked up by a lift truck equipped with a specially designed boom attachment. The containers are inflated, washed, and air dried, then transported on a light-duty monorail to a filling cradle which tilts to a 45-degree angle for better filling. Lift trucks carry filled containers to be weighed, then stored.

(More on page 114)

The Kid Glove Treatment!

That's what both railroads and shippers call Evans DF* equipped cars. And with good reason . . . because box cars so equipped transport lading so well that damage in transit is virtually eliminated.

DF equipped cars provide a cost-and-time-saving service to shippers who need no longer pay for "deadhead" dunnage. They are designed to permit no slack . . . no damaging load-shifting . . . and full-car capacity loads are easily planned through multi-decking.

Heavier loads per DF car are now increasing revenue per car mile for forty-two Class I railroads. DF cars are in constant demand as more shippers become aware of this "kid glove treatment" for their freight.

*DF *means damage-free, dunnage-free . . . only Evans makes it*

EVANS DF LOADER ...LOCKS IN LADING, ELIMINATES DAMAGE AND DUNNAGE

FREE BOOKLET! There's much more to the DF story of interest to both railroads and shippers. Write today for your copy of this interesting brochure to Evans Products Co., Dept. AF-7 Plymouth, Mich.

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KING-SIZE CONTAINERS

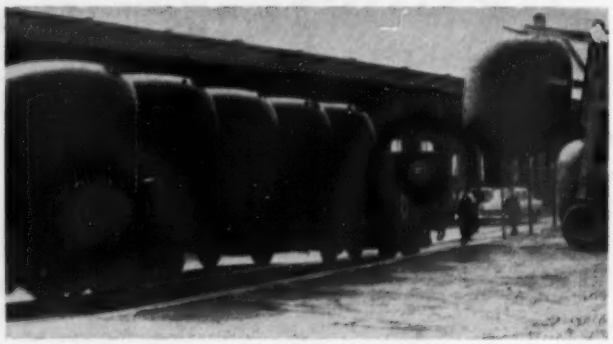
Continued

Shipment may be via standard 52½-foot railroad gondola cars or open-top truck trailers.

Unloading time was reduced from 16 man-hours with former methods to approximately ½-hour. At the receiving plant, in Ottawa, Illinois, lift trucks carry filled containers from gondola car or trailer directly to a specially designed emptying fixture. Through a sleeve valve, resins pour out of the container and into an air-tight system which carries them to processing machines.

Because of the unique design of the containers, it has been possible to employ a completely enclosed and mechanical handling system. Product contamination from fly ash, dust, dirt, cut bag fibers and other foreign materials has been entirely eliminated. For the fabricator that means higher product quality, fewer rejects.

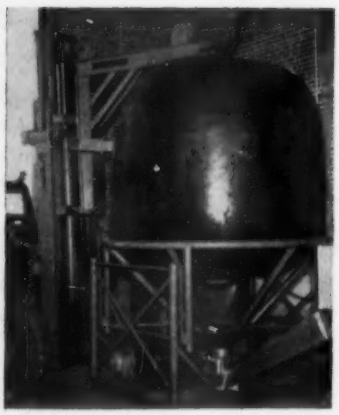
Collapsing the flexible containers after use and storing them outdoors has released valuable warehouse space (currently estimated at 60 to 80 cents per square foot per year) for other uses. The containers require little, or no surface preparation to protect them against weather.



DEFLATED CONTAINERS (top) require only a fraction of space occupied by inflated containers.

GONDOLA CAR (middle) holds seven filled containers. They are removed from car by lift truck.

UNLOADING FIXTURE (right) has sleeve valve which keeps product clean. Entire system is air-tight.



UNITIZING . . .

(*Continued from page* 107)

service for customers, reduces need for warehouse space and cuts down handling.

Some Variables

Variables that govern packaging specifications are many, beginning with capacity and dimensions of the customer's receiving equipment.

Next to be considered is the foil itself—its width, gauge, temper and end use. Generally speaking, heavier gauge foil like container stock, usually .002 of an inch and above, can be palletized. The coils of foil are placed on end on custom-built pallets, then wrapped with heavy building paper and secured firmly with steel bands.

Coils of finer gauge foil, ranging from .001 down to .00025 of an inch, usually need more protection and are suspended in the wooden skids or corrugated boxes. Two principal types of wooden skids are used, solid side and collapsible, and their selection is governed by the customer's unloading equipment.

In the solid side type, coils are usually placed two abreast and one or more deep, depending on diameter and weight. They may be removed by sling only.

Collapsible Skids

The collapsible skids, on the other hand, may be dismantled in stages by simply cutting steel bands and the coils may be removed either by sling or arbor inserted in cores.

Like the pallets, there are no standard dimensions for skids. Each is made to accommodate the coil sizes and weights of a particular order. Generally for lighter coils half inch net lumber is used for skid sides. For heavier shipments—some coils weigh as much as 1600 pounds—three-quarter and sometimes one inch net lumber is used.

For smaller coils, corrugated cases are satisfactory. Two weights are employed, light for coils up to 160 pounds and heavy for coils weighing a maximum of 200 pounds.

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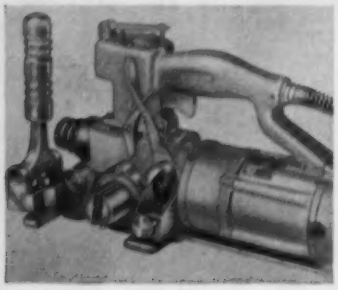
WHAT'S NEW... in Packaging and Shipping Equipment



Electric Banding Tool

The Type ECLS electric car banding tool features a built-in shear which cuts strapping close to the seal and thus eliminates a separate cutting tool and cutting operation. An automatic clutch tightens either ¾-inch or 1¼-inch bands to a pre-determined tension and holds them there until sealing is completed. Manufacturer is the steel strapping division, The Stanley Works.

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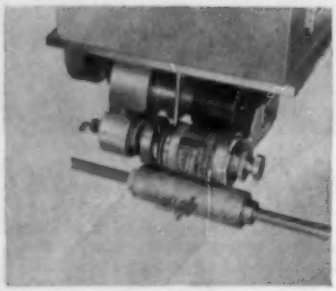

Imprinter for Wrapping Materials

A compact and versatile precision imprinting unit for attachment to all makes of wrapping machines. Because it is solenoid-operated and makes use of an actuating device, the machine is said to provide an infinite number of printing repeats to suit any cut-off length without changing the imprinting cylinder or die-wheel. A product of Adolph Gottscho, Inc., the new imprinter requires no attention during operation and holds entire day's ink supply.

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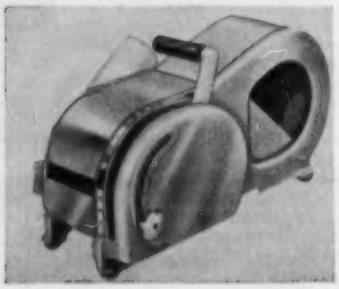

Heavy-Duty Tape Dispenser

Automatic tape dispenser manufactured by Lipton Mfg. Co. is identified as the Seal-O-Matic #55. It dispenses reinforced or regular tape in widths from 1½ to 3 inches and features a lifetime stainless steel blade and two-brush (pure bristle) wetting. It automatically measures, wets, cuts and ejects tape in lengths adjustable from 2½ to 36 inches on each pull. A side bottle maintains water level in a large tank. Body is fully encased.

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A Roller for Stenciling

A specially compounded rubber roller, used with an ink pad and special ink, is said to provide speed and economy in stenciling. The manufacturer, Diagraph-Bradley Industries, Inc., calls the stenciling system Rol-It-On and claims that it gives an exceptionally clear mark, saves 60% in ink usage, reduces wear and tear on stencil to a minimum, and is extremely simple to operate. It is offered in a special introductory kit.

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Draft-Free Door Hood

Frommelt Industries has developed a metal and canvas collapsible door hood designed to make any railway or truck loading dock completely draft free and virtually weatherproof. The design was originated particularly to help handlers of perishables to conform with U.S. Pure Food Regulations pertaining to constant cold maintenance. It is said to be practical and efficient for all industrial loading dock operations. The hoods are designed to fit standard size rail or truck doors regardless of slight dimension variances. An optional bottom cover is available if full four-side protection is desired.

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Snap—Open Multiwall

The "Snap-Open Sack" is a multiwall development of Hudson Pulp and Paper Corp. It is designed to permit bag users to open multiwalls

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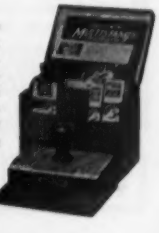
Also for addressing shipping tags and labels . . . prints postcards, menus, forms, bulletins. 8 complete outfits: $9.50 to $99.50, including supplies (f.o.b. factory). At office or shipping room supply dealers.



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You'll save more

with BI-DI* Tape

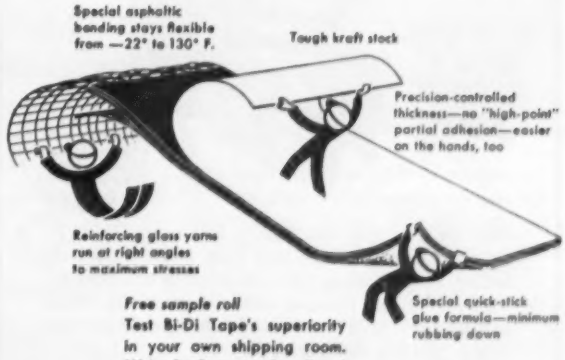
(bi-directionally reinforced)

It's the *time* saving that cuts your costs when you change to center seam sealing . . . so switch to the easy working, quick grabbing tape that saves more time . . . Bi-Di *bi directionally reinforced tape.*

No special equipment to buy or solvents to bother with when you're sealing with Bi-Di Tape. You can use this tape in any gummed tape dispenser. The water soluble gumming reaches full tack in an instant, grabs, and won't let go. It's a special blend of the finest animal glues, formulated in our own plant, coated in our own laboratory.

Bi-Di Tape meets all requirements of revised Rule 41, Sec. 7 of Uniform Freight Classification and is approved for parcel post and truck shipments.

Here's why BI-DI Tape is better


Special asphaltic banding stays flexible from —22° to 130° F.
Tough kraft stock
Precision-controlled thickness—no "high-point" partial adhesion—easier on the hands, too
Reinforcing glass yarns run at right angles to maximum stresses
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Free sample roll
Test Bi-Di Tape's superiority in your own shipping room. Write for free sample roll and complete data.

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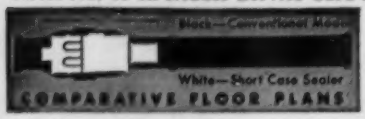

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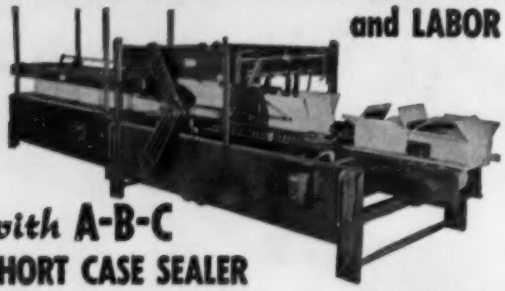
FLOOR SPACE
and LABOR



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Save two-thirds of your valuable floor space with the A-B-C Short Case Sealer—with increased packaging efficiency, more speed, less expense . . . Automatically glues, folds and seals either or both top and bottom flaps of shipping cases in one operation. Made in eight models to fit any production requirement. Hot air heaters dry the glue in one-half the time. Speeds up to 30 cases per minute.

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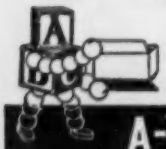
Whatever your packaging job, A-B-C has a production proved machine for you—case sealers, unloaders and unscramblers, side sealers, and hand gluers.



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SENIOR 3"
AUTOMATIC
$39.98 retail

Heavy duty Seal-O-Matic #55 for dispensing reinforced tape. At low, low price.
$49.98

Finest made for heavy duty shipping. Tape widths 1½" to 3". Features a lifetime stainless steel blade, 2 pure bristle brush wetting. Visual measuring scale. Self adjusting moistening element. Automatically measures, wets, cuts, ejects tape lengths adjustable 2½" to 36"—each pull. Side bottle maintains water level in large tank. Full encased body.

Send for either machine on 10-Day FREE TRIAL or write for price list with unusual discounts.

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World's Largest Manufacturers of Low Price Quality Automatic Tape Dispensers

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with a quick snap of the wrist and without the need of any type of opening tool. A series of small perforations in one corner, under the tape and near the sewing line makes the quick-opening possible. Openings may be stopped at any point for controlled spout pouring, or it can be continued along the entire length of the sewing line. Bag is available in both open-mouth and valve types.

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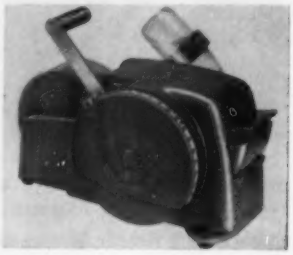
Low-Cost Automatic Dispenser

A low priced automatic tape machine is offered by Better Packages, Inc. for gummed tape users who are now using pull-and-tear moisteners, and want to step up efficiency of their sealing operations. The company emphasizes that the new unit, the Tapeshooter 75, does not replace the heavy duty Tapeshooter 100 and Counterboy 120 shipping room models. Two-brush moistening, one-piece housing, and pivoted pressure control tape moistening are some of the features which are cited by the manufacturer.



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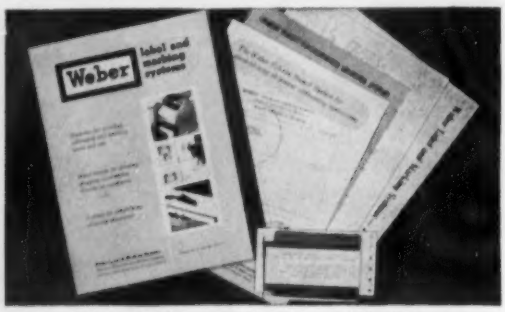


This "free" file-folder kit will show you

How to modernize your shipping operations

NOTHING LIKE IT EVER BEFORE. Not a catalog of products, but a file-folder of systems created to streamline shipment addressing and product identification marking, and simplify shipping paperwork. It describes and illustrates how to address and mark shipments faster, cheaper, and with less errors . . . how to tie-in addressing operations with preparation of shipping paperwork . . . and many other methods for making your shipping operations more efficient at a lower cost.

Weber

GET YOUR COPY OF THE WEBER LABEL AND MARKING SYSTEMS FILE-FOLDER KIT RIGHT AWAY. NO CHARGE OR OBLIGATION.

label and marking systems
Division of Weber Addressing Machine Co.
Dept. 1-G, Mount Prospect, Illinois
Phone: CLearbrook 3-2405

Circle No. 163 on Reader Service Card for more information

Continuous Roller-Marker

The Jet Roll-Line Marker was designed by Jet Mfg. Co. for continuous hand marking of pipes, drums, sheets, boxes, rubber, etc. The unit weighs three pounds and has a reservoir handle which holds 2½ ounces of ink. It may be manually operated or mounted vertically in production for continuous operation printing. Barrel and valve assembly are made of aluminum and wheels are made of hard rubber. Sealed bearings are used throughout. Maximum length of imprint is 15 inches with type from ⅛ to ¾-inch high.

Circle 225 on Reader Service Card for more information

Aerosol Adhesive

Development of a rubber-resin adhesive in a push-button spray container has been announced by Walsh Adhesive Corp. and E. I. DuPont De Nemours & Co. The waterproof adhesive is supplied in an 11-ounce container which holds enough to coat approximately 250 square feet of

NEW

ROL-IT-ON

ANOTHER D B PRODUCT

STENCIL MARKING SYSTEM

FOR ECONOMICAL – EFFICIENT

HI-SPEED STENCILING

Since the invention of the stencil cutting machine, there has been a constant search for a rapid yet economical method of applying ink through cut stencils. After years of development research ROL-IT-ON is the answer. Actual field tests have proven ROL-IT-ON to be many times faster and more efficient than any other stenciling, addressing, or marking method today. Prove the worth of ROL-IT-ON to your own satisfaction. Let your nearest D B distributor introduce you to this new concept in production stenciling. You have waited years for this so don't delay · · · contact him today.

the first GREAT improvement in stenciling in 20 years

MANUFACTURED BY

DIAGRAPH-BRADLEY INDUSTRIES, INC.

FIRST IN STENCILS SINCE 1893

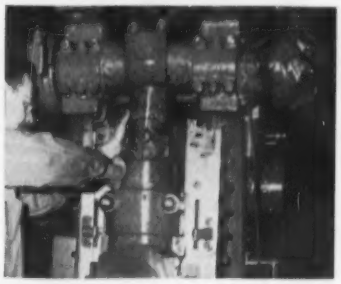
P. O. BOX 269 HERRIN, ILL.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Circle No. 45 on Reader Service Card for more information

For shipment or storage *anywhere* protect metal parts with a GREEN CORE® BARRIER RAP

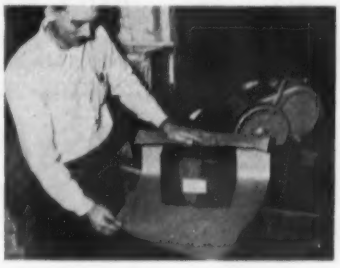
All-weather protection in transit for only $1...



Low cost Green Core *Rap* protects powerful punch presses built by Walsh Press & Die Co., Chicago. Presses are shipped uncrated. Polished working surfaces are coated with preservative and covered with Green Core *Rap*.

Green Core *Rap* is greaseproof, waterproof, self-sealing, and so pliable it easily molds around any part. Users tell us you can't beat it for economical protection of parts for domestic shipment or storage.

For overseas shipment under JAN-B-121 and Amendments 1 and 2...



Green Core Cloth *Rap*. In the picture above, a repair hub for ¾-ton trailers gets its protective overwrap for shipment overseas. The manufacturer, Dunbar Kapple Co., Geneva, Illinois, reports there hasn't been a packaging failure since changing to Green Core Cloth *Rap* in 1951.

Write for samples and test data on Green Core Cloth *Rap*, Type "C" Barriers Class I, Type 2, and Class II, Type 2; economy-priced Green Core *Rap*; and the anti-corrosive, rust and mold preventative Green Core Red *Rap*.

LEADERS IN THEIR LINE

MID-STATES Gummed Paper Company

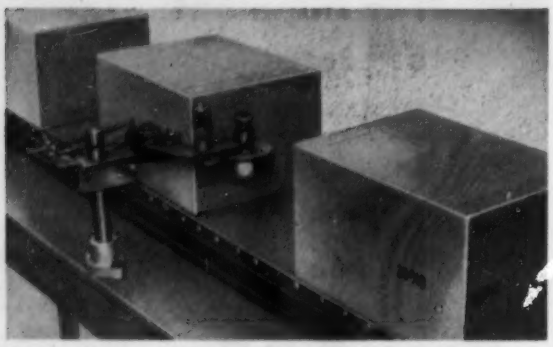
2511 S. DAMEN AVE., CHICAGO 8, ILLINOIS

New York • Syracuse • Philadelphia • Boston • Atlanta
Cleveland • Detroit • St. Louis • Los Angeles

Circle No. 107 on Reader Service Card for more information

Circle No. 65 on Reader Service Card for more information

Now...mark all 4 sides of cases automatically...*in a single pass*



Twin-action Gottscho ROLACODER Markers attach to conveyor or case-sealer

New friction-driven marking attachments enable you to mark codes or lot numbers on 2 or 4 panels of corrugated cases as they are sealed or conveyed... without requiring cases to be turned. ROLACODER *500* marker imprints front and one side panel, ROLACODER *200* unit imprints rear and other side panel — mounted in tandem they mark all 4 sides simultaneously. ROLACODER markers use quick-change rubber type, hold 8-hour ink supply; are designed for easy do-it-yourself installation.

Write for descriptive literature

Gottscho **ADOLPH GOTTSCHO, INC.** Dept. D, Hillside 5, N. J. | *Automatic* CODING, MARKING, IMPRINTING MACHINES

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

surface. The adhesive is called Bonad Spray Adhesive. It is recommended for high-speed, neat sealing of cartons and for a number of other general uses. It can be applied successfully on fabrics, leather, paper, wood, rubber and smooth metal.

Circle 226 on Reader Service Card for more information

Liner for Steel Containers

A heavy-gage plastic liner for steel containers for transporting chemicals and other liquids, has been developed by Jones & Laughlin Steel Corp. Given the trade name JaLiner, it is said to be the first closed-top plastic liner for steel containers to have the liner as an integral part of the container. It is installed during container production. JaLiner is available now for five gallon shipping pails, either open with a 16-lug cover, or with a close-top. Pouring fittings of either tin plate or polyethylene are available with JaLiner applications.

Circle 227 on Reader Service Card for more information

Your Inquiries Get Immediate Attention!
Use The Reader Service Card Bound Into This Issue.

IT ONLY TAKES 2 . . .

RULE 41 AMENDED TO ALLOW 2-STRIP CENTER-SEAM SEALING

CUT COSTS UP TO 2/3 WITH
Filament Reinforced Sealing Tapes And The FAMOUS

DERBY 32-T

The first important closure method change in 40 years! . . . now use 2 strips of tape for all shipments! The Derby 32-T especially designed to dispense all brands of tough filament reinforced tapes quickly, easily, accurately!

Cut Your Shipping Room Costs!
Write now, Dept. F for free booklet about 2 strips and the Derby 32-T

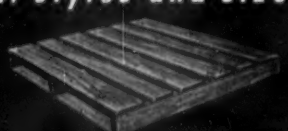
Derby Sealers **DERBY SEALERS, INC.**
DERBY, CONNECTICUT

Circle No. 31 on Reader Service Card for more information

BIGELOW GARVEY'S *EXPENDABLES*

- inexpensive pallet crate
- shipped in two pieces
- quickly assembled
- made to your requirements

HARD WOOD OR SOFT WOOD
PALLETS
all styles and sizes



38 YEARS MATERIAL HANDLING EXPERIENCE

Write for complete details and prices to...
BIGELOW-GARVEY lumber company

Circle No. 24 on Reader Service Card

USE OF PALLETS . . .

(*Continued from page* 109)

areas. Since the first of the year, there has been a growing tendency to make further concessions along these lines. These concessions originate with both rail and truck carriers.

It is interesting to note that the report of the Presidential Advisory Committee on Transport Policy and Organization issued on April 18, 1955, said in part:

"No economy that is based fundamentally on mass production and distribution of products throughout a continental market can continue to prosper without a transportation system that is dynamic, efficient, and capable of delivering goods and people with safety, expedition, with a high degree of dependability, and at the lowest cost in the expenditure of manpower and other scarce resources."

Palletized freight handling and shipping truly add to the safety and expedition of transportation at the lowest costs in the expenditure of manpower.

If the railroads of the nation see fit to approve the progressive action on pallet allowances which is under consideration, then they will, in our opinion, have gone a long way toward meeting the competition of other modes of transportation. However, it must be remembered that the granting of these concessions is only part of the battle toward obtaining the full savings of palletization. It is most necessary for shippers to make certain that their goods are bonded in unitized loads on pallets in transit, and that they are also properly braced within the transportation equipment to prevent shifting. Shippers should keep in mind that the best and most economical method of handling is worthless unless it is properly applied.

Circle No. 169 on Reader Service Card

Cut Truck And Dock Maintenance Costs ...Reduce Costly Equipment Down Time ...Protects Fragile Cargo with NEW...

■ Easily installed, specially developed reversible rubber coated fabric FLEX-O BUMPERS absorb the impact and shock of trucks against loading docks.

Write today for detailed information on the FLEX-O money savers.

Distributor inquiries invited

FLEX-O BUMPERS, INC.
1875 FOREST HILLS
CLEVELAND 12, OHIO

Let us Analyze your Shipping problems and give you the right Prescription ℞.

PHONE OR WRITE

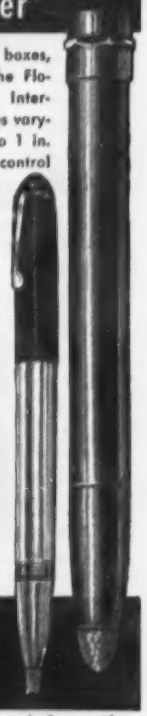
ALLEGHENY STEELBAND COMPANY
BOX 716 • PITTSBURGH 30, PA. • WAlnut 1-7100

Circle No. 8 on Reader Service Card for more information

Drawn with a FLO-MASTER

Speed up Your Shipments with the Flo-master*

When it comes to addressing boxes, crates, bags, cartons, etc., the Flo-master is an old smoothie. Interchangeable felt tips make lines varying in thickness from ⅛ in. to 1 in. Spring valve permits finger tip control of ink flow. Lightweight but sturdy aluminum construction. "Pocket Size" for general use —"King Size" for heavy-duty marking. Used with Flo-master Inks — instant-drying, waterproof, non-smudging.



Ask your supplier or write to Cushman & Denison Mfg. Co., Dept. F-21, 1953 W. 23rd St., N. Y., N. Y.

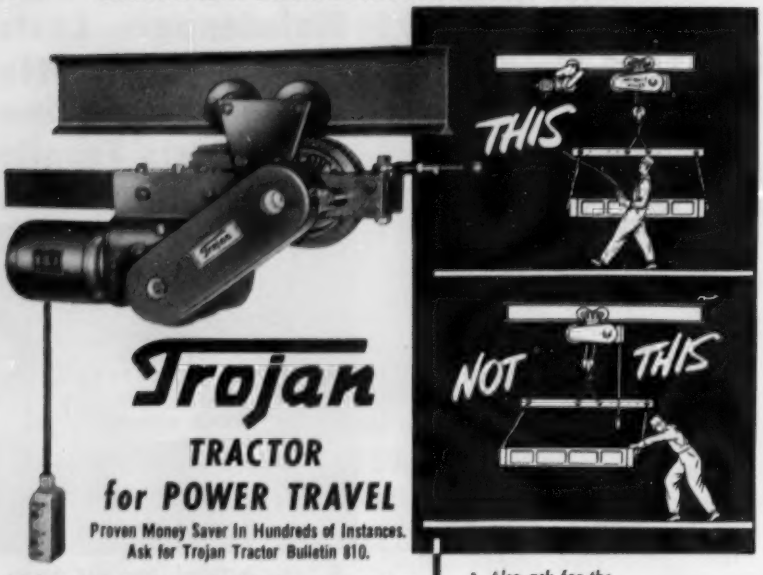
*A CADO Product

Cap of "King Size" may be screwed to bench to serve as stand.

Flo-master
FELT-TIP MARKER

Circle No. 39 on Reader Service Card for more information

Circle No. 42 on Reader Service Card for more information



Trojan
TRACTOR
for POWER TRAVEL
Proven Money Saver in Hundreds of Instances.
Ask for Trojan Tractor Bulletin 810.

Make your hand pushed hoists and cranes power traveled. Eliminate slow pulling and pushing drudgery. Speed up handling, save time, increase production, reduce costs. Simply attach a Trojan Tractor; inexpensive, quick delivery. Order one today.

DETROIT HOIST & MACHINE CO.
8210 Morrow St., Detroit 11, Mich.
Hoist, Crane & Tractor Designers & Manufacturers
Since 1905

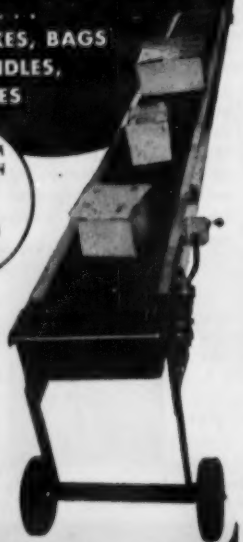
• *Also ask for the Detroit Hoist & Machine Co. New General Catalog 795*

Electric Traveling Cranes

Electric Hoists

NEW LONDON
"Cost Cutter"
CONVEYORS
Light • Low Cost • Versatile
for . . .
BOXES, BAGS
BUNDLES,
BALES

14' ALUMINUM MODEL SHOWN
$484
OTHERS FROM
$340



Electric or gasoline drive. Other flat and trough belt conveyors for inclined or horizontal applications.

Write for Catalog

NEW LONDON ENGINEERING CO.
New London, Dept. F, Wisconsin

Circle No. 115 on Reader Service Card

Airmatic...

THE MODERN MECHANICAL MESSENGER SYSTEM

Airmatic pneumatic tube systems do their jobs so smoothly, so efficiently, so quickly that they don't receive any "fanfare" and "fuss". They're just taken for granted as time, labor and money savers in providing for the transporting of bottles, parts, samples, fragile medical supplies, complete files and IBM cards as well as the traditional uses for transporting papers and money.

There's an AIRMATIC SYSTEM for your need. Contact your local representative or the AIRMATIC home office for further information.

AIRMATIC SYSTEMS, INC.
378 Bergen Blvd., Fairview, N. J.
Phone: Cliffside 6-0475

Circle No. 5 on Reader Service Card

DISTRIBUTORS . . .

(*Continued from page 69*)

Utah, Region 8; J. B. McDonald, Air-Mac, Inc., Seattle, Wash., Region 9; and M. E. Canfield, M. E. Canfield Co., Los Angeles, Region 10.

During the Association's first year, the Board of Directors will study the regional set-up. The members in each region then will elect their director to serve on the next year's Board.

Other officers elected were: Executive vice-president, William W. Oliver, Lift Truck Sales and Service, Inc., Kansas City, Mo., 2nd vice-president, C. C. Haddrell, Lee H. Long Associates, Inc., Wellesly Hills, Mass., and Treasurer, Albert Bode, the Bode-Finn Company, Cincinnati, Ohio. C. H. Ellis, of the C. H. Ellis Company, Indianapolis, Ind., served as permanent chairman of the meeting, presiding at all organization sessions.

Selected to act as Secretary and General Counsel to the Association, was the law firm of King, Noble and Sonosky of Washington, D. C. The fiscal year was established as from April 1 through March 31. Headquarters for the Association will be maintained in Suite 509 at 1028 Connecticut Avenue, N. W., Washington 6, D. C.

Among the other distributors or distributor representatives who attended the meeting, were:

California: A. R. Canfield, M. E. Canfield Co., Los Angeles; O. L. Jenkins, E. C. Buehrer Associates, Inc., Oakland; Jay Hamerslag, Jr., Hamerslag Equipment Co., San Francisco.

Florida: John W. Stiles, Stiles Conveyors & Trans., Miami.

Illinois: Ray Groban, Atlas Lift Truck Rentals, Inc., Chicago; J. G. Green, Hoofer Green Co., Chicago; T. G. Madden, Madden Equipment Co., Chicago; Darby Selzman, Washington-Kinney Co., Chicago; W. E. Thorsen, Modern Handling Equipment, Inc., Chicago.

Indiana: Clare F. Falkner, Material Handling Equipment Co., Indianapolis; W. W. Kidney, Kidney-Wood Co., Inc., Indianapolis; Roy J. Klecka, Materials Handling

Equipment Corp., South Bend.

Kentucky: Chet Brumleve, Cardinal Carryor Co., Inc., Louisville; Martin Ceder, Martin A. Ceder, Inc., Louisville.

Louisiana: A. E. Abaunza, Ajax Machine Works, New Orleans; Polk Hebert, Industry Services, Inc., New Orleans.

Massachusetts: Herbert A. Ireland, H. G. Davis, Inc., Boston; Horace E. Little, N. E. Industrial Truck, Inc., Brookline; John E. Mitchell, Field Machinery, Inc., Cambridge.

Michigan: Pat Patterson, Don W. Kelsey Co., Detroit; R. E. Rhinehart, Russell E. Rhinehart Co., Detroit; R. J. Barnett, R. J. Barnett, Grand Rapids.

Missouri: George Van Keppel and William Van Keppel, G. W. Van Keppel Co., Kansas City; G. G. Sharp, Elmer E. Sharp & Associates, Kansas City; W. J. Bublitz, Bublitz Machinery Co., Kansas City; John J. Connell and R. W. Connell, John J. Connell Co., Inc., St. Louis; Louis A. Hoerr, II, Midvale Material Handling Equipment Co., St. Louis; Floyd D. Seele, Material Handling Equipment Corp., St. Louis.

New York: E. C. Larkin, Larkin Equipment Co., Albany; Frank J. Hohl, Brookfield; E. D. Farrell, E. D. Farrell Co., Inc., Buffalo; Royce Day, Industrial Truck Sales, Latham.

Ohio: James H. Lopeman, Material Handling Equipment Corp., Cleveland; L. Schroy, R. E. Condit Co., Dayton.

Pennsylvania: John S. Grimison and Joseph McEwen, Rapistan of Pennsylvania, Philadelphia; H. Somers, Furnival Machinery Co., Philadelphia; Louis W. Linsley, Material Handling Inc., Pittsburgh; T. C. Leydon, De Huff and Hopkins, Rosemont; Arthur C. Farley, Arthur C. Farley & Co., Flowertown.

Rhode Island: Harry Freeman, Freeman Industrial Service, Providence.

Tennessee: Syd M. Lerner, Jr., Wurzburg Brothers, Inc., Memphis; W. C. Anderson, Carbide Chemical Co., Oak Ridge.

Texas: Larry Meyers, John C. Mayfield Co., Houston.

Wisconsin: O. Wilson, Wisconsin Industrial Truck Co., Milwaukee.

Chestnut

POKE-PAK®

Costs so little
It's Expendable!

MEAD board

POKE-PAK is a strong, hard and rigid piece of solid fiberboard weighing only about five pounds but supporting all the spot-glued bags your fork truck can lift. Specially made of chestnut and other hardwood fibers, Poke-Pak is smooth and free of nails and splinters that tear bags and cause losses.

GREATLY REDUCES TIME of loading and unloading, and saves many times the low cost of expendable Poke-Pak.

ENDS RETURN OF PALLETS, and accompanying credits, chargebacks and extra freight. Puts an end to costly car floor lining, too, since only the end walls need now be lined. So light and compact that 60 to 70 Poke-Paks can be stored in the space required for one wood or metal pallet. Poke-Pak is more economical in every way.

FREE CONSULTANT SERVICE is yours for the asking; carloading diagrams, bag patterns and samples of Poke-Pak, which can be made to fit any size bag unit, truck or car. Write for complete information, including interesting brochure on Poke-Pak and unitized load handling.

MEAD BOARD SALES, INC.
River Road, Lynchburg 2, Virginia
SALES OFFICES:
CINCINNATI 9, OHIO ..... 3347 Madison Road
CHICAGO 30, ILLINOIS ..... 6124 N. Milwaukee Avenue
NEWARK 2, NEW JERSEY ..... 10 Commerce Court
DETROIT 35, MICHIGAN ..... 18045 James Couzens Highway
BOSTON 10, MASSACHUSETTS ..... 43 Leon Street

POKE-PAK COSTS SO LITTLE IT'S EXPENDABLE

Circle No. 103 on Reader Service Card for more information

CESCO'S

TOTE-SHOP BOXES

DO YOUR ROUGH/TOUGH JOB EFFICIENTLY • EASILY ECONOMICALLY

on Conveyors · Pallets

Hand Trucks . Skid Platforms

or what have you

RUGGED CONSTRUCTION - PRIME MATERIALS

Model #WB (Wood Bottom)

Stock sizes will accommodate loads up to 200 Lbs., possibly greater, depending upon material packed and handling method.

MODEL WB

STANDARD SIZES AVAILABLE FROM STOCK
(Prices net – F. O. B. Northampton, Mass.)

Lots of	WB-1	WB-2	WB-3
2000	$1.96	$2.14	$2.28
1000	1.99	2.17	2.31
500	2.02	2.20	2.34
250	2.07	2.25	2.39
100 Min.	2.12	2.30	2.44

Model	Size	Length	Width	Depth	Weight
WB-1	I. D.	14⅞"	11¾"	9"	11¾ lbs.
WB-2	I. D.	18"	11¾"	9"	13 lbs.
WB-3	I. D.	20"	11¾"	9"	14 lbs.

Solve your Storage and Handling Problems with our Tote Boxes, Trays and Pallets. Write today for quotations on special sizes. Special Marking Facilities, for identification purposes, are available in various colors and numbers. Please submit detailed specifications.

CESCO CONTAINER CO.
Factory: NORTHAMPTON, MASS.
General Offices:
Dept. (F) 475 Fifth Ave., New York 17, N.Y.

Circle No. 33 on Reader Service Card

TRUCK PRODUCTIVITY . . .

(*Continued from page 86*)

Receiving: All parts and material for the machine shop arrive by highway carrier, to be unloaded by the fork trucks which operate continuously through two eight-hour shifts per day. Average time to unload is two hours. Average weight of load is 420 pounds. The heaviest load, consisting of two drums filled with small parts, is about 2000 pounds. Three men are involved in the operation. Fork trucks do not enter carriers.

Formerly, unloading required eight men, who took from six to eight hours to empty a truck. With the present system, overtime is, therefore, not required.

Storing: Stocks are kept in an open area in the vicinity of the receiving station. Stacking is by parts categories to simplify and speed the taking of inventories.

Fork trucks unload and place a 420 pound casting in storage in from three to five minutes. The same operation used to take 20 minutes by muscle power.

Production: Delivery of an average order from storage to the machine shop today takes from three to five minutes, including loading of the fork truck. By the old fashioned carts, this delivery required 15 minutes.

Further intangible savings have been made possible by the increased reliability of the receiving station in filling orders promptly and efficiently. This has been maintained even in bad weather, which formerly caused serious delays when men had to load, carry and push heavy parts in rain or snow.

Injuries, many of which resulted from handling slippery parts, have decreased 90 percent since the fork trucks were put into use.

Breakage has been much decreased. When parts were loaded and unloaded by hand, many were dropped and damaged. Says Shop Superintendent Wallace M. Linderman, "I am unable to make an exact estimate in the decrease of breakage since we started using the fork trucks, but it must be in the neighborhood of 60 percent."

Photos and data courtesy Towmotor Corp.

No. 852 STEEL SIDE-DUMPING HOPPER TRUCK. Side gate hinged on bottom extends to dump load away from running gear. Wheels remain on ground when body is tipped. Body is 36" wide, 60" long, 18" deep. Fifth-wheel steer and turning yoke for power unit towing.

No. 833 TOWVEYOR TRUCK. Reduces dispatching and sorting time in motor terminals and warehouses. Rigid all steel, all-welded frame with hardwood platform. Plastic or rubber tired wheels. Grease seals available. Clip board for instruction sheets, messages. Box for trip or inventory cards.

No. 855 FIFTH-WHEEL STEER TRAILER TRUCK. Rigid all-steel, all-welded frame with hardwood platform. 48" wide x 96" long. Equipped with dual 16" wheels, 4.00 x 8 six ply heavy duty pneumatic tires.

TOWSLEY

TASK TAILORED GENERAL and SPECIAL

FLOOR TRUCKS

The trucks you see can be adapted to many uses. We have many more economical general purpose trucks to choose from and top flight engineers to develop new ones for your special job. If you have a unique handling condition that requires special planning, write or phone Towsley first.

No. 509 MANY PURPOSE SHELF TRUCK. All-welded, steel construction. Pipe push handles at both ends. Furnished with 3, 4, or 5 shelves. 12" or 15" space between shelves.

No. 200 GENERAL PURPOSE PLATFORM TRUCK. All-welded, steel construction. Platform available in steel or 1" hardwood stock. Level type wheel mounting. Accommodates a variety of end racks at each end.

No. 900 SEMI-LIVE SKID with KUM-A-LONG JACK. Ideal for receiving, shipping, storage and progressive assembly lines. Provides maximum materials mobility. KUM-A-LONG JACK pivots in a minimum radius. All steel or 1⅜" hardwood deck.

TOWSLEY TRUCKS, INC.
1770 ELMORE ST.
CINCINNATI 22, OHIO

Circle No. 151 on Reader Service Card

EATON SELECTS POWELL *flowmatic*

IN MODERNIZING HANDLING SYSTEM

Versatile new automatic container line perfect mate to modern handling methods

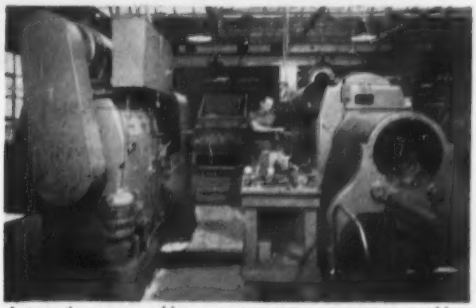
"The Powell Flow-Matic System is best suited to the multiplicity of operations in a modern industrial materials handling setup," — say engineers of the Saginaw, Michigan, plant of Eaton Manufacturing Co.

"When we decided to bring our handling operations up to date, we investigated several types of popular handling equipment and found Powell Flow-Matic to be most flexible."

The new system incorporates completely automatic handling from stockroom to finished product. It has resulted in exceptional production gains without additional manpower. It has provided Eaton with a bonus of added floor space—a cleaner, brighter place to work. Initial checks have given Eaton officials reason to believe the new system will pay for itself in much less time than originally expected. The pictures on this page are typical of the many ways Powell Flow-Matic is helping Eaton set these handling records.

Each Flow-Matic Box holds a supply of more than 6,000 hydraulic lifters to keep the automatic Gridleys in operation for a full shift. Previously these pieces were handled in 200 lots in the small tote pans seen to the right of the Flow-Matic stands. Eaton found that less product handling enables operator to spend more time gauge checking the product. This resulted in closer product control.

Warehousing became a simple matter. Here 56 Flow-Matic boxes replaced more than 1,800 smaller units that cluttered the area.



Automatic screw machine operators can now run two machines without performing fatiguing handling jobs that require constant lifting of 60-lb. tote pans.

Handling efficiency personified. Because most stations require less servicing a single truck and driver can cover more ground.

Flow-Matic's flexibility is everywhere. Here a precision grinding operation picks up and drops part at same station. No lost motion.

POWELL PRESSED STEEL Since 1930

the POWELL PRESSED STEEL Co.
DEPT. 275
HUBBARD, OHIO

WAREHOUSING . . .

(Continued from page 65)

operation only, but for us it meant an approximately 50 percent saving in charging equipment. We have four different types of trucks but only one size battery. Thus they are interchangeable, and it is necessary for us to have only one spare for all of the trucks. A special hydraulic lift hoist provides easy access for any repair job.

Communications Cover All Operations

A good plant operating team can work efficiently and economically only if each part of the team is able to communicate quickly and reliably with others, and with the Plant Superintendent. As we grew, the plant operating functions became more varied and complicated, and need for good communications became more critical. Every inch of our warehouse is now covered with a public address system. Speaking trumpets are located at convenient spots throughout the plant.

The maintaining of floors free from dirt, debris and litter has received sharply increased attention, and the role of mechanical sweepers is now firmly established. A powered sweeper can cover some 100,000 square feet an hour in open areas. The side brush throws the dirt into the path of the main brush, which, in turn, throws it into the hopper; vacuum draws all dust into the bag. The side brush also permits rapid sweeping, flush with pallets, bins and machines.

Specific material handling advantages resulting from sharp attention to maintenance might be better traction, fewer accidents, protection of tires, prevention of any bumpy buildup of dirt, and prolonged floor life. Housekeeping and safety should be almost as important as plant production because, many times, production depends to a great extent on how well housekeeping is executed. Housekeeping and orderliness, both inside and outside the plant, must be of major importance.

Outdoor storage of frames was at one time a tough problem. But handling them with a crane makes the problem simple. They are stacked about 17 high, and the crane can load them directly into the carrier trucks for shipment.

Engineering and material handling talent that has been applied in developing our modern facilities has been used to bring about better service to Studebaker dealers and, through them, to Studebaker car and truck owners. The building layout, operating methods and material handling equipment have been coordinated and standardized into one smooth-running operation from receiving through delivery.

Caught with Our Powers Switched

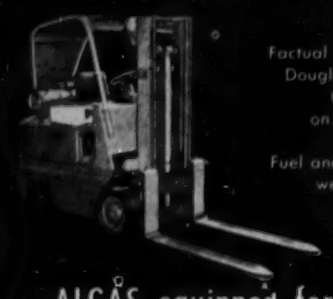
In the May issue of FLOW, on page 258, we described a double faced pallet truck manufactured by The Colson Corporation as being electric powered.

We should have said this truck is equipped with a gasoline engine.

engine hour costs cut more than 50%

on internal transportation equipment

AT DOUGLAS AIRCRAFT



Factual figures taken from a test conducted by Douglas Aircraft Company at Santa Monica, California, show that engine hour costs on both industrial tugs and fork-lift trucks have been slashed more than 50%. Fuel and combustion system maintenance costs were cut from more than 50% on tugs to ⅓ the cost of gasoline on fork-lifts.

ALGAS equipped for LP-Gas operation

In addition to the cost reduction indicated above, there is the saving resulting from longer engine life and less frequent major overhauls, with less downtime. LP-Gas, the modern fuel, combined with *precision engineered ALGAS carburetion equipment* are responsible for these substantial savings! You too can benefit by this money-saving combination on your internal transportation equipment.

ALGAS equipment is U.L. approved

Have you read "THE DOUGLAS REPORT?" Figures of the actual tests are available . . . write for your copy today.

Write or wire now for complete information

AMERICAN LIQUID GAS CORPORATION

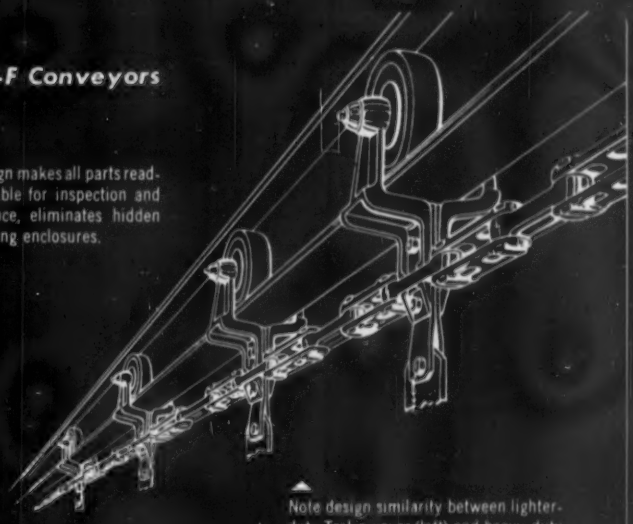
1109 Santa Fe Avenue • Los Angeles 21, California

Established 1932

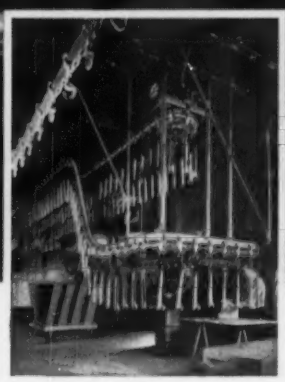
Circle No. 1 on Reader Service Card for more information

Announcing TROL-E-VEYOR by A-F Conveyors

Open design makes all parts readily accessible for inspection and maintenance, eliminates hidden dirt-catching enclosures.



Note design similarity between lighter-duty Trol-e-veyor (left) and heavy-duty version (above). Trolleys, chain, track, even sprockets follow proven-efficient engineering precedents—assure smooth operation and minimum maintenance.



Automatic dipping operation eliminated troublesome backlog in small parts painting. Here, conveyor speed is timed so that parts are dry at end of the line. One operator handles whole operation. Note Trol-e-veyor's steep inclines, tight horizontal turns and vertical curves, minimum superstructure.

New low-cost **TROL-E-VEYOR**

gives you all the advantages of proven heavy-duty designs!

Now, at low cost, your smaller manufacturing and processing operations can have full benefit of overhead handling and storage. With new A-F Trol-e-veyor, you can save valuable floor space, reduce handling time, make whole operations more efficient.

Trol-e-veyor gives you all the advantages of proven heavy-duty designs, at a new low price that will likely fit within your smaller operations budget. Yet you can expect the same low maintenance, smooth operation, quality engineering and workmanship of far more expensive conveyor systems.

Years of A-F engineering experience, in all types of conveying, back this new lighter-duty design.

Because of Trol-e-veyor's design simplicity, components are immediately available from stock, installation is quick and low-cost. Optional 8", 12", 16" or 20" trolley spacing assures fitting your job correctly at minimum cost. Load factors are more than ample. Loads up to 160 lbs. can be handled easily without excessive wear.

Get complete details on Trol-e-veyor now. Call your A-F Distributor or write today for our new TROL-E-VEYOR BULLETIN.

A-F

A-F founded the package conveyor business in 1901

A-F Conveyors

Custom Engineered Conveyor Systems

Packaged Conveyors—Wheel, Roller, Belt, Trolley

Pan and Rack Washers

Metal Cleaning and Processing Equipment

The Alvey-Ferguson Company, Dept. DD-7, Cincinnati 9, Ohio and Azusa, California

Circle No. 80 on Reader Service Card for more information

in useful literature

These publications, written by experts, are available. Indicate your choice on the self-mailing Readers Service Card.

Magnetic Equipment:

Brochure from Eriez Manufacturing Company describes the firm's complete line of permanent non-electric magnetic equipment. The literature contains photos, uses and benefits of magnets.

Circle 231 on Reader Service Card

Overhead Handling:

How Trambeam overhead handling equipment can provide efficient, precision handling in machining areas of the plant, is explained in a four page folder by Whiting Corporation.

Circle 232 on Reader Service Card

Hydraulic Cushion:

Boom backlash caused by sudden loss of the load can be hydraulically cushioned by Boomsnub, says the manufacturer, Boomsnub Company, in a four page release. Advantages of the unit, which may be used on all types of cranes, are pointed out, together with technical data.

Circle 233 on Reader Service Card

Steel Storage Files:

Information on a low-cost, space saving method of storing inactive records in Safe-T-Stak steel storage files, is contained in a publication available from Diebold, Incorporated.

Circle 234 on Reader Service Card

Portable Dock:

The Raymond Corporation would like you to have a copy of its four page bulletin on the Porta-dock, a new idea in loading and unloading motor trucks. The unit is designed to eliminate conventional built-in loading docks.

Circle 235 on Reader Service Card

Two-Dimensional Templets:

Release published by Repro-Templets Inc. tells about the firm's complete plant layout service in two-dimensional templets. The system is said to be the simplest, cheapest and most accurate method of plant layout available.

Circle 236 on Reader Service Card

Industrial Sheet Packing:

Ten types of all-purpose pure gum and synthetic rubber sheet packing and the recommended uses for each, are contained in a colorful release available from Hewitt-Robins Incorporated.

Circle 237 on Reader Service Card

Bulk Conveyor Catalog:

Jervis B. Webb Company has issued a 12 page catalog describing its bulk conveyors for handling coal, ashes, sand, gravel, chips and similar materials. The publication is profusely illustrated, showing installations in a wide range of industries.

Circle 238 on Reader Service Card

Sanitary Conveyor Belting:

Main Belting Company is offering information on its white sanitary conveyor belting, especially designed to meet the rigid sanitation standards of food and candy factories.

Circle 239 on Reader Service Card

Fast Pallet Loading:

Bulletin issued by J. W. Greer Company gives facts about the Palletizer, a machine said to make pallet loading a fast, safe and inexpensive operation for any production or packing line where cartons or packages are to be loaded on pallets.

Circle 240 on Reader Service Card

Steel Strapping Machine:

Gerrard Steel Strapping Division features the Model Q round steel strapping machine in a colorful folder. Many pictures, technical data and benefits of the unit are included in the publication.

Circle 241 on Reader Service Card

Industrial Truck Catalog:

Baker-Raulang Company has published a catalog which lists its complete line of industrial trucks. Included are gasoline and electric units, and the manufacturer's new Gas-O-Matic truck.

Circle 242 on Reader Service Card

Cushion Conveyor Rollers:

Typical Stilson Tool Inc. roller installations are depicted in a brochure available from the manufacturer. The firm manufactures five types of all-neoprene cushion conveyor rollers, each with interchangeable parts.

Circle 243 on Reader Service Card

Moving Rubber Sidewalk:

How to ride on a sidewalk while standing still is described in a folder available from B. F. Goodrich, Industrial Products Division. Goodrich calls it "the non-stop, no-waiting way to travel".

Circle 244 on Reader Service Card

Packaging Adhesives:

Paisley Products, Inc. is offering an illustrated folder describing six classifications of adhesives for the packaging field. Full information is also given on the company's laboratory control methods of manufacture, and an operation data sheet is included.

Circle 245 on Reader Service Card

"In-Line" Trucks:

The Colson Corporation has available a bulletin on "In-Line" trucks for subfloor and overhead systems. Specifications and outstanding characteristics are given for both the overhead and floor towing models.

Circle 246 on Reader Service Card

Speeds Handling:

Anything hands can do, machines can do better and at lower cost, says Pitney-Bowes, Inc. in an informative folder. The company tells how you can cut costs the easy way, and offers a plan for both large and small businesses.

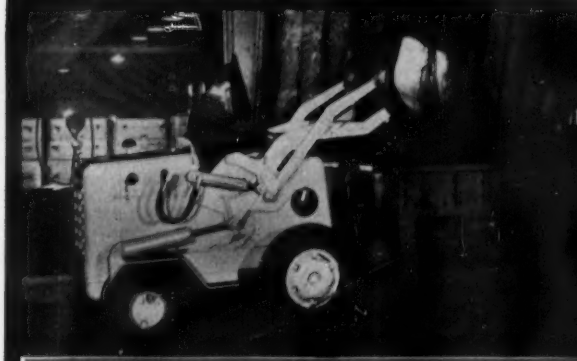
Circle 247 on Reader Service Card

Tape Talk:

Quality, economy and utility of tapes is discussed in an illustrated brochure available from Polyken Products Department of The Kendall Company.

Circle 248 on Reader Service Card

New design of PAYLOADER® produces more for both old and new customers



FOUNDRY — handles sand, scrap, castings, chips, waste . . . pushes and pulls — indoors and outdoors.

METAL WORKING — Fast transport for small castings and parts, chips, drums, barrels, etc.

CHEMICALS — Coal, ashes, dry chemicals lumpy or fine are moved fast — at low cost.

FERTILIZER — Scoop up, transport, charge hoppers, unload box cars — a ton at a time.

The 1955 model HA "PAYLOADER", on the job in all kinds of industries, has already proven that it is the production champion in its class. Long-time "PAYLOADER" users, as well as new owners, report new highs in production and new lows in bulk-material handling costs with the new HA.

They praise the 40-degree bucket tip-back at ground level that digs heaped bucket loads easily and carries them close and low for fast, safe transport without spillage. They like the increased power, and the ease and speed of operation that comes from the torque converter drive, easy steering and powerful hydraulic brakes.

If *you* have bulk materials of any kind to load, unload, scoop-up, carry, dump, pile or spread — *by the ton* — you should find out what this sensational new tractor-shovel can do. Your nearby "PAYLOADER" Distributor is ready to show you.

SEND FOR full information on the 1955 model HA, or larger "PAYLOADER" tractor shovels.

THE FRANK G. HOUGH CO.

☐ Send data on Model HA — 1½ cu. ft. (1-ton) cap.

☐ Send data on larger "PAYLOADER" units (up to 2 cu. yd.)

Name

Title

Company

Street

City State

PAYLOADER®

MANUFACTURED BY

THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

Circle No. 74 on Reader Service Card for more information

Chain Hoist News:

A 12 page illustrated catalog has been released by the Chisholm-Moore Hoist Division, Columbus McKinnon Chain Corporation. Featured is the CM Lodestar, an electric chain hoist designed to serve its normal life without costly maintenance or interruptions in work schedules.

Circle 249 on Reader Service Card

Bulk Packaging:

Six different types of bulk packaging are shown in a brochure available from Gaylord Container Corporation.

Circle 250 on Reader Service Card

More Warehouse Space:

Hyster Company thinks you'd benefit by reading its latest job study. The report tells how a west coast warehouse quadrupled its previous volume through efficient material handling.

Circle 251 on Reader Service Card

Parts Storage Reference Guide:

Valuable information on parts storage and inventory control is contained in a handy reference guide which may be obtained from Equipto, Division of Aurora Equipment Company.

Circle 252 on Reader Service Card

Shovel-Crane Info:

Revised descriptive bulletins covering the Lima Type 34 and 44 power shovels, cranes, draglines and pull shovels on crawler and wheel mounts, may be obtained from Baldwin-Lima-Hamilton Corporation, Construction Equipment Division.

Circle 253 on Reader Service Card

Wooden Box Booklet:

Available from the National Wooden Box Association is a cartoon-type fact booklet which emphasizes a wide range of uses for nailed wooden boxes and crates. The booklet is non-technical in nature, and conveys its message by brief copy and simple illustrations.

Circle 254 on Reader Service Card

Closed-Circuit Color T.V.:

"Unique" is the word used by Radio Corporation of America to describe its new service of color television for closed-circuit shows. An interesting pamphlet gives details on how you can adapt industrial television to your industry.

Circle 255 on Reader Service Card

About Overhead Cranes:

An informative 20 page catalog issued by Chicago Tramrail Corporation illustrates and gives complete information on top running double girder cranes with top running trolley and under running trolley. Detailed dimension sheets are given for each type.

Circle 256 on Reader Service Card

Truck Attachments:

Featured in a catalog published by Iron Works Inc. are two new fork truck clamps, said to be revolutionary. Also included in the literature are photos, specifications and descriptions of numerous attachments manufactured by the firm.

Circle 257 on Reader Service Card

Overhead Bulk Handling:

Engineers, contractors, material handling and construction men will be interested in a four page brochure available from Seaboard Equipment Co., Inc. The literature describes the Merton Overloader, a unit for fast straight line loading and variable height discharge of bulk materials.

Circle 258 on Reader Service Card

Modern Communication:

If you're interested in what progressive-minded companies are doing to build their profits through use of the latest method of communication, Motorola Communications & Electronics, Inc. suggests you send for a copy of its Newsgram.

Circle 259 on Reader Service Card

Barrett PalletOx Model PX 4" lift cap. 4000 up to 6000 lb.

BARRETT PALLETOX

the low-cost "walk away" for loads up to 6,000 lb.

Barrett PalletOx walking type power lift truck is a money-saver on short hauls...load spotting... general pallet handling. Often eliminates expense of rider type power truck operation. PalletOx is made for fast operation—gets into tight corners—short turning radius—no lost-time gaps to slow down handling. 4" lift prevents floor snagging. Write for complete descriptive literature.

Hydraulic hand-lift models also available for loads up to 60" long. Capacities—2,500 and 6,000 lb., 4" lift. Release handle to lower. Write for Bulletin.

You will want Catalogs 551-1-2-3 on the complete Barrett "Walkie" type Power Truck. Your request will bring a copy.

BARRETT-CRAVENS COMPANY
161 Dundee Road, Northbrook, Illinois

Representatives in All Principal Cities
Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada

Barrett Handling Equipment

BARRETT

ONE MAN DOES MORE THAN 3 OR 4...WITH A BARRETT

Circle No. 21 on Reader Service Card for more information

Automatic Packaging Equipment:

Your packaging will be more profitable when you use Pak-Rapid equipment, claims the manufacturer, because you'll obtain the advantages of economy, efficiency, versatility and simplicity. Details are given in a colorful release.

Circle 260 on Reader Service Card

Conveyor Catalog:

A 16 page catalog has been published by The Rapids-Standard Company, Inc. covering the entire line of Rapistan conveying equipment. Included are specifications, general data and application photos.

Circle 261 on Reader Service Card

Double Pitch Chains:

Diamond Chain Company, Inc. has published a 30 page catalog on double pitch chains and sprockets for conveying and power transmission. Photographs, dimensions and selection data are contained in the publication.

Circle 262 on Reader Service Card

Designed For LP-Gas:

LP-Gas will give you sludge free performance hour after hour at low cost, says Clark Equipment Company in a colorful brochure on the subject. Clark gives details on its industrial truck designed for LP-Gas.

Circle 263 on Reader Service Card

Stops Rust:

A 19 page booklet available from Angier Corporation discusses all phases of VPI corrosion prevention and its applications. The booklet gives a detailed explanation of vapor phase inhibitors and the chemical action that occurs to halt rusting of ferrous metals and aluminum.

Circle 264 on Reader Service Card

Product Folder:

For ease of reference, Market Forge Company has available a products index which may be used to hold information on material handling equipment. The index may also be used as a chart against inventory, and as a guide for the selection of additional equipment.

Circle 265 on Reader Service Card

Versatile Carriers:

Kalamazoo Manufacturing Company has prepared a brochure on its gas and electric carriers which stresses the versatility of each type unit. The manufacturer claims that the superior engineering incorporated in the trucks adds up to maximum operating efficiency and economy for you.

Circle 266 on Reader Service Card

Color Movie:

A color movie showing on-the-job applications of the TerraTrac crawler-mounted M-3 fork lift may be obtained from American Tractor Corporation.

Circle 267 on Reader Service Card

Methods and Ideas:

Forty-eight manhour and space-saving handling operations are contained in a catalog available from Barrett-Cravens Company. Various types of Barret material handling equipment are shown at work, with brief descriptions of the pictured applications.

Circle 268 on Reader Service Card

Conveyor Facts:

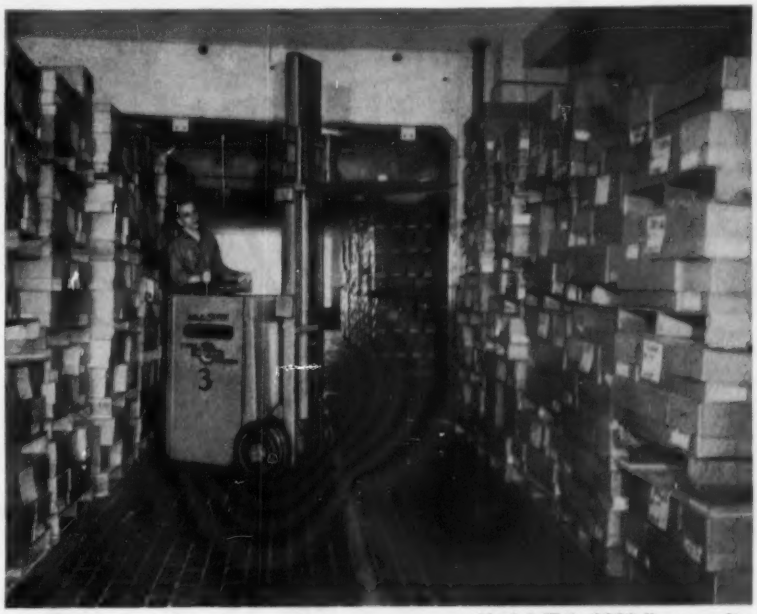
Detailed information, specifications, application data and illustrations on roller gravity, wheel, belt and live-roll conveyors is contained in a publication of conveyor facts available from Lamson Corporation.

Circle 269 on Reader Service Card

Vacuum Lifting:

Brochure from International Staple and Machine Co. describes a unit designed to lift anything faster, safer and cheaper by vacuum. Called Vac-U-Lift, the manufacturer is Blakeslee Mfg. Co.

Circle 270 on Reader Service Card



Model JE-3. 3000 lb. capacity

CRESCENT AISLE-SAVER

Solves Cramped Storage Space Problem

For fast maneuvering in narrow aisles and congested areas you can't beat a Barrett Aisle Saver! One operator does more than 3 or 4 using less efficient methods.

Battery powered for economy . . . engineered for durability. Stand-up end controlled . . . saves operator time getting on and off. Compact . . . short turning radii. Speeds up to 5 m.p.h. Forward, backward tilt.

5 models. Capacities 1000 to 4000 lb. Collapsed heights—68″ to 83″. Total fork lift 90″ to 130″. Free lift to 66″. Also available in non-telescopic models. Electric power. Special attachments—forks, crane arms, grabs, clamps.

You will want Catalog 5210 for complete aisle-saver information. Also, Catalog 535 on the complete Barrett line. Your request will bring you copies.

BARRETT-CRAVENS COMPANY
162 Dundee Road, Northbrook, Illinois

CRESCENT BARRETT

Barrett Handling Equipment

ONE MAN DOES MORE THAN 3 OR 4...WITH A BARRETT

Representatives in All Principal Cities. Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Can.

Circle No. 22 on Reader Service Card for more information

BRITISH FAIR . . .

(*Continued from page 84*)

loader, an attachment which is fitted to the back of the truck and, by two fork arms and a patented platform, raises the drum from the ground level with the floor of the vehicle.

The complete equipment weighs less than 560 pounds (which is distributed throughout the length of the chassis) and loads of up to 1830 pounds can be raised from the ground in 15 seconds. The device stows away neatly under the truck when not in use.

A successful combination of loader and conveyor has been developed by C. H. Johnson, Ltd., for stockpiling loose bulk materials brought to site in end-tipping and telescopic trucks. This eliminates the need to tip on ground and then piling with shovel or grab and the laborious method of backing trucks up the pile.

For a number of bulk-handling jobs, an overhead loader represents the logical development of the now widely used front-end type of loading shovel. Shown at the Fair by F. E. Wetherill Ltd. was the first hydraulic machine of this type manufactured in the United Kingdom. Admittedly a specialized item of equipment which cannot have the same wide range of uses or versatility of the more universal front-end loader, this piece of machinery offers, under its own conditions, maximum output.

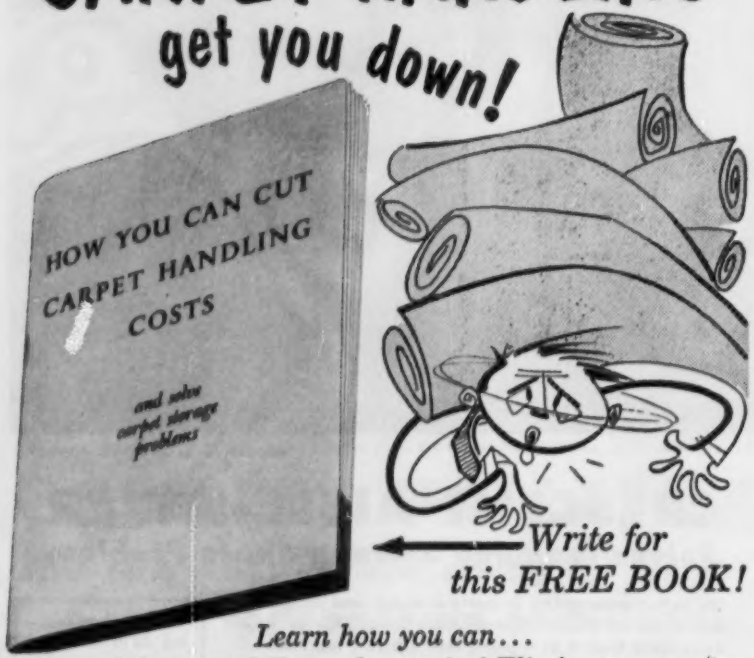
The overloader is capable, depending on the material handled, of an output of 100 tons or more per hour; offers greatly simplified operation—the relevant factors here being considerably reduced steering effort and fewer clutch and gear changes; and, thirdly, the ability to work in spaces too small or restricted for ordinary mobile shovels. In appropriate cases, it provides an unprecedented low cost per ton figure.

This *Weatherill* hydraulic overloader is available with a three-quarter or one cubic yard scoop to which digger teeth may be fitted if required. It is an integrally built machine using the *Fordson* industrial tractor for power and transmission, the four-cylinder engine giving 44 brake horsepower at 1800 revolutions per minute. Technically, the machine is extremely interesting in that the side arms are raised for the first part of their travel by a pair of main rams located on either side of the main frame toward the rear of the machine. At the extremity of their travel, a set of secondary rams take over and complete the overhead movement of the side arms and scoop.

Convertible Crane

A crane, newly developed by J. W. & T. H. Carter Ltd., to convert on site from pneumatic tired wheels to a tracked vehicle and to give a versatile performance is the one-ton mobile, convertible to excavator, double-rope grab or dragline scoop. With universal boom and bucket, it is suitable for shoveling, skimming and backacting. Lifting capacity is one ton at 10 feet radius or half a ton at 17 feet radius. The power unit is a diesel air-cooled engine of 20 brake horsepower.

Don't let
CARPET HANDLING
get you down!



Write for
this FREE BOOK!

Learn how you can...
Lower labor costs! Expand capacity! Eliminate cut-order bottlenecks! Profit with present equipment!
Modernize at less cost! Get pushbutton results!
And much more!

SEND FOR YOUR FREE COPY TODAY

THE EASIQUIP COMPANY
1322 N. Indiana Street, Los Angeles 54, Calif.
Please send my free copy of "How You Can Cut Carpet Handling Costs."

INDIVIDUAL
FIRM NAME
STREET ADDRESS
CITY ZONE STATE

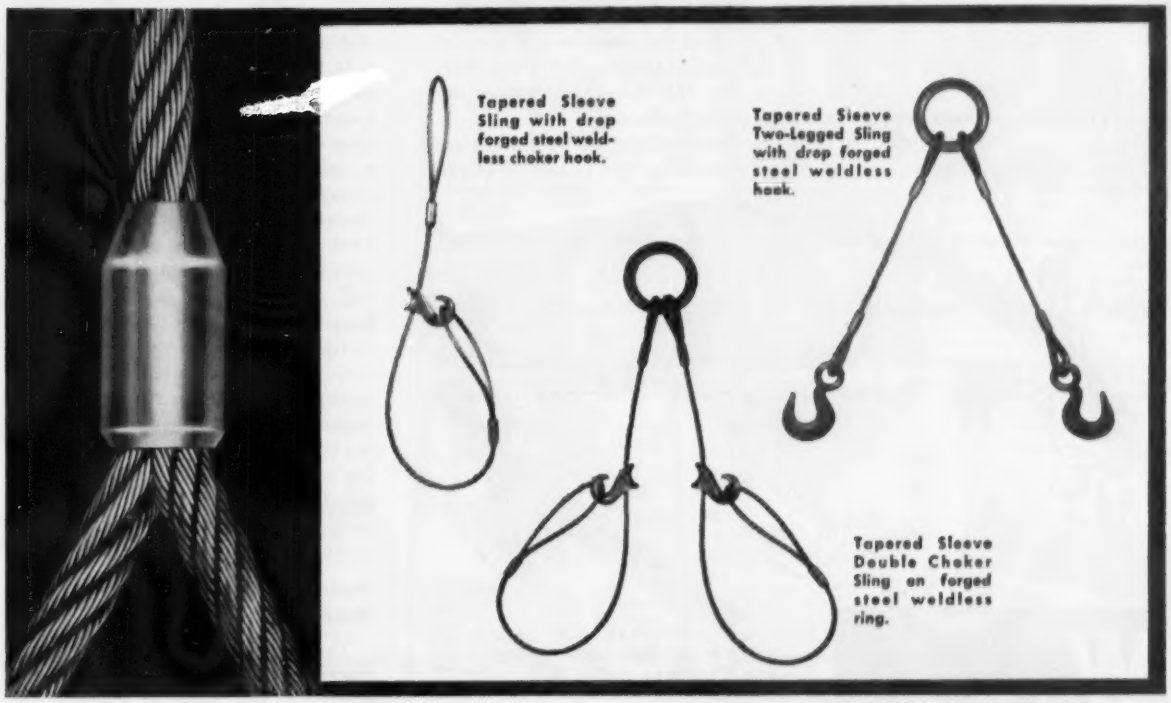
EASIQUIP
ROLLSTOR SYSTEM
for better handling and storing of broadloom carpet

Circle No. 49 on Reader Service Card for more information

THEY'RE ALL STEEL—RESIST KINKING, CRUSHING—

ROEBLING SLINGS

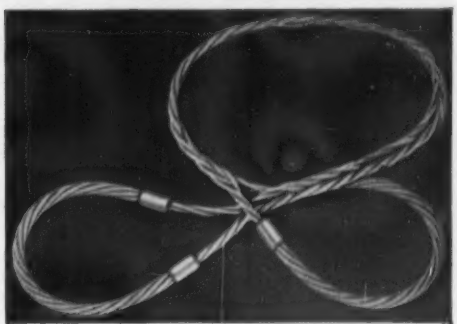
WITH TAPERED SLEEVE


Tapered Sleeve Sling with drop forged steel weldless choker hook.
Tapered Sleeve Two-Legged Sling with drop forged steel weldless hook.
Tapered Sleeve Double Choker Sling on forged steel weldless ring.

ROEBLING SLINGS are made of Preformed "Blue Center" Steel Wire Rope with independent wire rope core. *All steel*, they have top resistance to kinking and crushing . . . are easy to handle all through their working lives. Their tapered sleeve splices are strong as the rope itself and require no allowances.

What's more, the streamlined tapered sleeves won't "hang up" on loads or other equipment. All strand ends are permanently secured beneath the sleeves; no strand or wire ends protrude to cause injury in handling.

Roebling Slings are delivered ready for work. They can be furnished as chokers or in any multi-leg construction with a galvanized steel thimble with attached hook, link or shackle. Write for descriptive folder, and adopt Roebling Slings for new efficiency. John A. Roebling's Sons Corporation, Trenton 2, N. J.



ROEBLING "FLATWEAVE" SLINGS

have some very special advantages. They're extra kink-resistant . . . easy to handle . . . their broad, flat bearing surface protects the load and prolongs sling life. Write for copy of the "Sling Data Book" that describes "Flatweaves" and gives information of real value to every sling user.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13235 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

Circle No. 138 on Reader Service Card for more information

FURTHER HORIZONS . . .
(Continued from page 77)

Conveyor flow patterns can be arranged into straight lines, parallel lines, sub-assembly or mixing lines. The future will probably find more portable conveyors in use, and it is likely they will be lighter in construction.

Many raw materials are now handled by gravity—through the use of tanks and containers, of various kinds, in conjunction with connecting chutes and pipes. This method presupposes that the material has been at a sufficient height, or that it has been raised to that height for some other purpose such as storage. Successful use of gravity handling depends upon the type of material and its tendency to wedge or bridge in any of the spouts or tanks through which it passes. The so-called "angle of recline" of the material is a general indication of its easy-flowing character; the flatter the angle, the greater its fluidity.

The flow pattern for pure gravity handling will be continuous in a vertical plane, with various steps and hold-ups. Mixing can be done with ease in this type of handling. Various other modifications can be made in the flow pattern to combine it with other types of operations. While this method may be cheap under various favorable conditions, it would seem preferable to adopt a more positive type of handling machine.

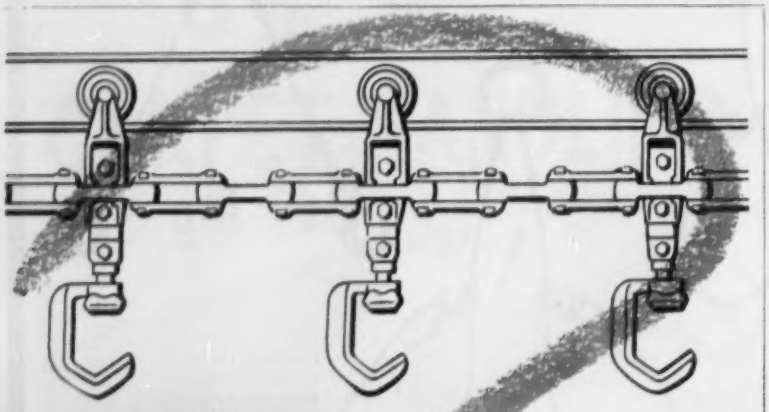
In the future, we expect that the use of gravity handling of raw materials will be kept to a minimum—except where it is necessary to raise the material into silos or storage bins until it is ready for discharge into chutes, conveyors, trucks, railroad cars and similar vehicles. Use of gravity handling will also be made in the warehousing of packaged materials on inclined flow racks, wherein they move forward as the end package, or tier of packages, is removed for shipment. Other uses are in feeding from tanks or bins to machines for mixing, blending, sizing, packaging and similar applications. Such functions are adaptable to automation by remote control.

Handling Semi-Finished Materials

The preparation of semi-finished materials from raw stocks is considered as that phase of manufacturing or processing that leads to a product ordinarily not used directly as a finished item but required in the preparation of an end-product. A good example is the making of chemical ingredients from raw mineral ores, or the refining of crude oils for various chemicals.

Handling raw materials for making semi-finished products usually consists of transporting the bulk items to mills and factories by means of railroads, steamships, trucks, cranes, conveyors, pumps and pipes—so that completion of ingredients or basic materials may be done by their own processing lines. Equally diverse is the processing equipment used in producing semi-finished items.

The reduction or elimination of shipping and handling of raw materials between source and processor can be accomplished only by cutting down the distance between them. Ore converting plants can be moved to the mines, oil refin-



WHY PAY FOR A HEAVIER LOAD-RATED TROLLEY CONVEYOR THAN YOU REALLY NEED ...

NOW, A-F offers you the most complete range of A-F *ENGINEERED* Trolley Systems in history . . . And A-F Engineers, because of their more varied experience in every type of plant, can quickly prove to you whether a simple A-F TROL - E - VEYOR* or sturdier A-F Heavy-Duty** Trolley System is needed.

***A-F TROL-E-VEYOR—LOAD-RATED AT 40 LBS. OR 80 LBS. PER TROLLEY**

(NEW—A-F TROL-E-VEYORS are light in weight—remarkably flexible—require little superstructure, offer unusual steepness of incline and short radii of horizontal curves)

****A-F HEAVY-DUTY-TROLLEY—LOAD-RATED FOR 600 LBS.—150 LBS. PER TROLLEY**

(With grease-lubricated trolleys, sealed against dirt. Wheels are new, improved flangeless type with "line contact" for reduced friction and maximum load. Easily lubricated. Automatic lubricators may be furnished for 4" A-F Trolley Conveyors).

Before you order any type of conveyor write us. We'll be glad to submit an estimate. In many cases we will be low. But low—or not—you can be sure your A-F Engineered Conveyor System will be *right!*

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A-F FOUNDED THE PACKAGE CONVEYOR BUSINESS IN 1901

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Also Packaged Conveyors and Systems
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eries to the wells, flour mills to the grain fields, and so on, but this has already been done in most instances.

As a result, future cost reductions in handling must come from improved methods. Elimination of unnecessary operations may be the best point for improvement. Or it may come by the use of such developments as conveyors of 100 miles or more length, continuously carrying bulk materials on endless belts.

Unitized methods of bulk handling of less than carload lots of materials, using standardized containers and platform type railcars, are still being developed.

The processing of raw materials follows a pattern of infinite variety and requires almost as many types of treatment. A corresponding diversity in methods of handling also exists—each material still has its own peculiar treatment and flow pattern by which it is finished.

The problems of handling are being combined with the actual treatment of materials to make a shorter and more simple flow pattern. For instance, the mixing of ingredients can be done while the materials are being conveyed to some other phase of the process. Or the raw materials can be screened and sized while they are being carried to subsequent operations. Liquids can also be treated and processed as they are flowing through a long path in a chemical process so that, in effect, the entire operation is a continuous material handling operation.

Such continuous processes are the hope for the future in reducing the cost of manufacture, in assuring absolute uniformity of product, and in reducing costs to a minimum. By operating on 24-hour schedules, a maximum use of plant and equipment is obtained. This feature, coupled with automation and system monitoring to protect it against emergency failures, can be used to increase production far above what can now be done.

Materials in the bulk or irregular form are not as adaptable to continuous processing as liquids, chemicals, synthetics, powders and others. But even batch-type processing can be done entirely automatically, by remote control, when the various stages are of the same

CONSULT FOR THE BEST
P-S Materials HANDLING EQUIPMENT
CORRUGATED BOX with Legs
For moving or storing heavy metal parts; built of heavy corrugated steel; reinforced throughout with angle iron. Legs are designed to permit complete accessability with fork or power lift truck. Made in any size or load capacity.
Item B-746
STACKING RACK with Safety Interlocking Feature
Item C-496—Designed for space- and labor-saving stacking, safe tiering, of coils or similar materials, where head room is important factor. Easy to move by lift truck or overhead crane, by one-man operation. All-steel welded, corrugated bottom, I-beam ends. Interlocking ends prevent shifting.
Item B-337
Corrugated STEEL PLATFORM
Item B-768
Heavy Duty DIE TRUCK
Item B-426 $67.20
STOCK CHECKER'S TRUCK
Designed to handle a large variety of items or parts. Three steel shelves with 1" flanges all around. Floor clearance 9½". Overall height to top shelf 42½"; top of table 50". 44" long, 20" wide. All steel welded construction. Semi-crated approx. 190 lbs.
Item No. NS-298 $51.15
Hand DUMP TRUCK
Catch turnings from screw machines, ideal for holding scrap, etc. Water tight.
Top 25⅜" x 45"; bottom 23¾" x 27". Depth is 17½". Height 23". Furnished higher or lower on special order. Carries about ½ cubic yard. Two 8" semi-steel wheels and two 4" metal swivel casters. Weighs app. 125 lbs.
Item C-1258 $46.50
Vertical DRUM LIFTER
For handling open and closed steel drums in vertical position, by crane or hoist. All-steel welded construction. Sure-hold safety barrel grip. Saves plant space. Use for either high or low ceiling condition
Portable Heavy Duty BAR RACKS
Item C-497—Handling and storage of steel shapes simplified for one-man operation. Using overhead crane for storage in tiers, rack selection is no problem. Design permits bar selection from any rack without disturbing tiers. Quick—convenient—safe—efficient storage for maximum man-hour savings. Built to any capacity and length of stock.
Item B-599
All metal PALLET
Item NS-948
BOOK RACK
Industrial DUST PAN
Item S-703
Square STACKING BOX
Item C-928
Item S-918
CORE RACK
Item B-688
CARBOY TRUCK
Item C-609
SKIP TOTE BOX
SHOVEL TRUCK Item S-339-M
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Item NS-415M $81.20
(Roller bearing, 6" x 2", all-metal wheels.
Item NS-415R $85.25
(Ball bearing, 8" x 1½", rubber-tired wheels).
WHEN ORDERING—Always give "item" number. All prices are f. o. b. Detroit. Prices are subject to change without notice.
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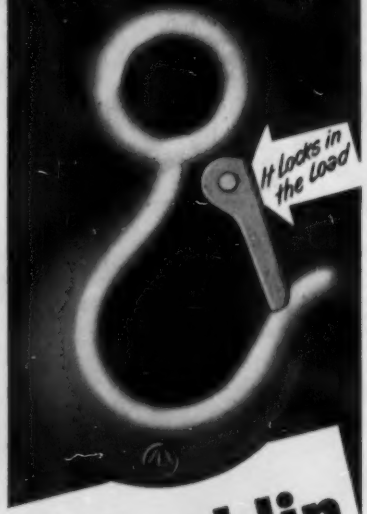

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DROP FORGED — HEAT TREATED
½ ton to 15 ton capacity

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length for each batch and not dependent on the judgement of the operator.

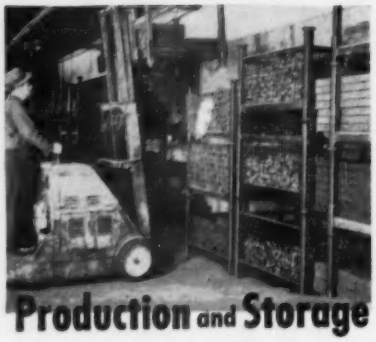
Whenever the process consists of material flow or mechanical operations, it is possible to use automation. This is done by a master controller that operates various valves and mechanisms in the proper sequence and at suitable time intervals. The duties of the operators will then be simplified to consist only of patrolling, inspecting, preventive maintenance and removal of the product. And even the removal of the product can be done automatically, where desired, releasing men for other, more important jobs.

Continuous processing can be clearly demonstrated by our company's method of continuous spinning and processing of rayon and synthetic yarns. In this, a viscous, cellulosic liquid is pumped continuously through spinnerets, having many tiny holes, and into an acid bath where it is coagulated into a yarn that is stretched and made to progress around godet wheels and treating rolls. During its travel, it is treated with hot acids, water, bleaches, oil and soap at suitable intervals in a continuous path. Utimately, it is dried, twisted and wound on bobbins or beams ready for use by the weaver. The resulting product is of unusually high quality.

The future for continuous processing of raw or semi-finished articles or materials is extremely bright for American industry.

Handling Finished Materials

Finished material classifications are often arbitrary, and the lines of demarcation rather indefinite. For example, yarns to the spinner are a finished product. But to the weaver, they are semi-finished, even as the woven cloth is to the tailor. However, the application of material handling techniques to each has a great amount of similarity. Automation is readily applicable where the products are identical, but it cannot be applied whenever production is dependent on an operator's judgement.



Production and Storage Costs cut with ERCO

STAK-PAL system of Material Handling

STAK-PAL tubular stacking racks have been designed to handle quickly and efficiently your every storage need.

Stacking operations are safer, easier and trouble-free with removable corner posts or end frames.

QUANTITY PRODUCTION, STANDARD SIZES and our own SEAMLESS TUBE MILL assure you of a low cost product, combined with quality workmanship. All STAK-PAL tubing, square or rectangular has a minimum 11 gauge wall for rugged strength and almost complete elimination of maintenance costs. Specials made to specifications.

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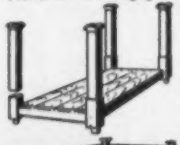
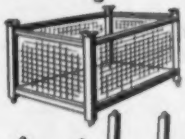
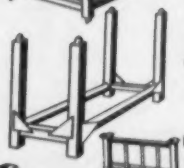


STAK-PAL
Three styles Type A with one center support in the basic for two-way entry. Type B two angle supports. Type C designed with six angle center supports, both of latter are four way entry.



STAK-BOX
Type X box and Type H bin box racks are for use with forks at least as long as the over all width of the racks and have angle supports similar to type B standard STAK-PAL racks.



COIL RACK
With the SK type coil rack considerable time is saved in handling and stacking.

END FRAME RACK
Type F Stak-Pal with removable end or side frames are desirable for handling of parts shorter than the space between the corner posts or for any parts requiring support between posts.

C. E. ROBINSON CO.
Manufacturers of Metal Products
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The range of finished materials that require material handling is extremely diverse, but certain basic divisions are evident. These can be made on the basis of various industries as shown in Fig. 8. The possibility of mechanizing the operations and the handling between each is the never-ending task of the industrial engineer. Where this can be done completely, automation and continuous processing can be obtained, and with remarkable results.

Since many products cannot be shipped directly from the finishing machine, they must be warehoused until ready. The mechanization of storage operations offers new opportunities for automatic material handling. One method is the use of flow racks, where the stored packages move forward as the end ones are shipped. Such a system will permit the application of full automation by the punched-card method, whereby units can be stored and removed by remote control, in the exact quantities required.

Assembling Finished Parts

In the production of various complicated machinery, such as automobile or airplane engines, assembly and testing are time-consuming jobs that are difficult but not impossible to mechanize. A great amount of saving can be effected by increasing the use of conveyor tables and installing every part or subassembly in sequence. Wherever possible, it is desirable to have conveyors feeding the various stations on the main assembly line. If these auxiliary conveyors have stations for completing subassemblies, much time can be saved at the stations on the main line. With this arrangement, it is possible to install a larger total number of parts with a minimum number of hold ups on the main assembly line caused by defective parts.

These operations at present seem to be difficult to mechanize or fit to automation, but given sufficient study and planning there is no reason to believe that this could not be done if the cost were justifiable.

Maintenance work involves material handling problems not generally encountered until recently. They originate in the desire to repair and overhaul large equipment in a minimum length of time so that outage cost and service loss are kept low. For many years, railroads have maintained a form of production-line overhauling system whereby equipment is brought into shops and repaired in a continuous line or on parallel spur-lines. Whenever major overhauling work requires too much time, it is necessary to shunt the unit to a special track. In some work, transfer tables are used to move equipment from station to station.

The advent of large passenger airplanes in the transportation industry and the frequent requirement for inspection and major overhauling have posed a material handling problem of large size and complexity. The greatest difficulty is in providing a facility large enough to house a line of large planes, with their huge wing-span, and, at the same time, provide a machine shop capable of handling all the repair work on sub-assemblies and parts involved in such equipment.

Everything in place!

"A PLACE FOR EVERYTHING"

17 PANS NESTED

Use Pak-N-Stak a durable, drawn, lightweight, leak-proof container.

Automation in today's industry requires fast, efficient materials flow to and from the production machines. Pak-N-Stak does this job well.

- Lowest price pan of its type on the market.
- Note the side taper allowing full nesting.
- Full rolled edge for maximum safety in handling.
- Designed to stack — contents remain visible for identification.
- Over a million Bathey containers used by industry today.

MBC

SPECIFICATIONS			
Length	18¼"	Depth	5½"
Width	10 15/16"	Shipping Weight	5 lbs.

WRITE FOR BROCHURE ON COMPLETE BATHEY LINE
DEALERS IN PRINCIPAL CITIES

BATHEY MANUFACTURING CO.

101 SOUTH MILL STREET PLYMOUTH, MICHIGAN

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MODERN FABRICATION RELIES ON EFFICIENT MATERIALS HANDLING

ALL-STATE *Cranes*

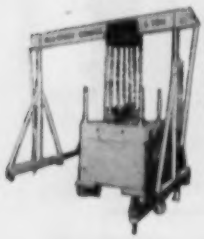
CUT HANDLING COST

Surveys show that material handling costs average 30% of total production cost. An ALL-STATE overhead crane will provide astonishing savings in both labor and time, enabling you to reduce these major production costs to a minimum.

JIB CRANES

Self-supporting, require no overhead support — ideal for outdoor crane service. Complete revolution possible for maximum coverage. Heavy Duty Ball Bearings. Capacities from 250 lbs. to 12,000 lbs.

Single Girder Type, Top Running Crane, Hand Geared, Motor Driven, Push Type. Available also in underslung or double girder style. Capacity 1 to 10 tons — up to 60 foot span.



GANTRY CRANES

with adjustable girder height — telescoping outriggers — ball bearing swivel casters.

FREE

Complete information upon request.

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FURTHER HORIZONS

Continued

An installation has been designed, and is under construction, for the purpose of servicing several large planes at the same time on a production line basis. Planes are to be brought into the maintenance hangar and thoroughly inspected. All repairs will be scheduled, replacement parts prepared for installation, and all sub-assemblies requiring overhauling removed to the machine shops and processed through in a systematic manner. As the plane moves down the production line from station to station, various work will be performed and the repaired subassemblies reinstalled. When it reaches the end of the line it has been completely overhauled, re-inspected, weighed, shop tested and made ready for flight tests.

The material handling equipment used in such a facility consists largely of cranes, lift-trucks, towing trucks, monorails and the usual equipment of a large ma-

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Push the load . . . not the truck! You can't make—*or save*—a penny pushing and handling deadweight! That's why thousands of lightweight Magliner trucks are in daily use in large and small companies alike.

Only ¼ the weight of steel-and-wood equipment, Magliners cut down on operator fatique . . . increase work output . . . save handling dollars! Easy to manuever and easy to operate, Magliner platform trucks move loads faster and cheaper . . . keep your men in a working mood, too!

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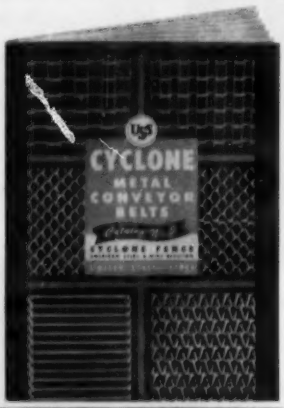

Cyclone Metal Conveyor Belts are working wonders—cutting processing costs, speeding operations, increasing product output. They are flexible—open meshed—sanitary—immersible in water, oils, chemicals—temperature resistant. Cyclone Belts come in several basic styles and in carbon, alloy and stainless steels. There are many mesh and wire sizes available together with various accessories.

This big, 32-page catalog will show you the extremely wide scope of Cyclone Belts – the most complete line of wire mesh processing belts now available. There are actual pictures of many applications. See why Cyclone Belts can do your particular job so well.

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METAL CONVEYOR BELTS
SPIRAL WOVEN
FLAT WIRE · FLEX-GRID

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UNITED STATES STEEL

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chine shop. It would be extremely difficult to mechanize any appreciable amount of the material handling. The same would apply to other types of repair and overhauling used in conjunction with, for example, instrument repairs, radio and television repairs, electric appliance overhauling and so forth. This is so because no two repairs are alike and every operation requires thinking and decision on the part of the operator.

"Automation" Integrates Machinery and Controls

The term "Automation" has grown to include the complete process of producing finished or semi-finished parts by automatic means. The means for accomplishing this are forgotten in the glamorous fact that no apparent effort is required by an operator to do it all. "Automation" was formerly considered as the control equipment, inserted into a continuous process, to perform the proper function at the correct time and place. Now, both the machinery and the control equipment are so

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BELT CONVEYOR
For Assembly - Inspection - Packaging
The most ADAPTABLE portable conveyor you can find. Exclusive unitized design 10' to 80' lengths. Write for UNITABLE Bulletin now.

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✓ Reduce Handling Costs Up to 50%
✓ Increase Storage Space Up to 85%
WITH RACK WIRE PALLET® STOCKTAINERS
• Save Floor Space
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Safe stacking position.

Collapsed for return shipment or storage.

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Makes ANY Gasoline Engine RUN BETTER- LAST LONGER- and Cost You LESS!

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IN THE NEW
FIBERGLASS
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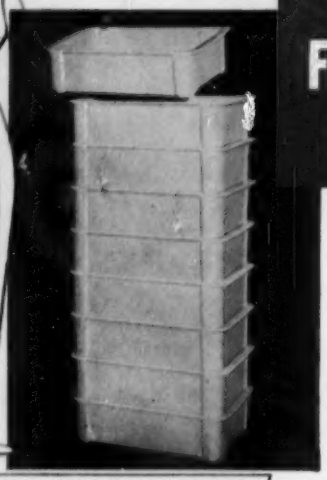

* light but strong to carry greater payloads
* last indefinitely without maintenance
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* no sharp edges or corners; accident-free handling
* TOTELINE tote boxes are available in color for easy identification.

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World's largest producers of fiberglass reinforced resin trays and tote boxes

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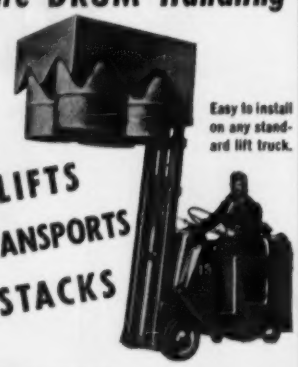

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TRAY-HART. DRUM CARRIER
- Alignment compensator automatically places drums into gripping position.
- Carrier loads over drums.
- Gravity action causes gripping shoes to securely hold load.
- Release can only be effected by application of hydraulic pressure.
- Standard models handle standard 55-gallon drums in diameters from 22¼" to 24⅝", and permit 6" variation in height in same load.
- Special types available for Monorail, Crane, and other applications.

TRAY-HART. CYLINDER CARRIERS
- All sizes and types of cylinders handled with ease.
- Quantity according to lift truck capacity.
- Write for complete information

Manufactured by
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FURTHER HORIZONS

Continued

integrated as to be considered as one complete automatic production unit.

"Automation" will work at all times to perform certain tasks assigned to it, tirelessly, day after day. It will insist on doing each job exactly according to a program that has been given to it. Any deviation can cause trouble, and the system must be able to recognize it, stop the machine, and call for assistance in such an event.

To do this it will be necessary that the following apparatus be provided:

1. A machine or series of machines capable of performing the required operations.
2. A mechanical controller that can actuate the control mechanism on the machines.
3. An indicating mechanism that shows the operator when the task is performed.
4. A feed-back or compensating device which notifies the controller and machinery that the operation is accomplished.
5. An emergency control system to prevent trouble or, when it does happen, to stop the process until the difficulty has been removed. (*See Ref.* 1)

With such a machine, the material handling can be done on a production line or a batch type basis as the process requires. By the addition of a suitable programming mechanism, it should be possible to make, by remote control, specific changes in the manufacturing facility to produce any required number of parts of a particular type.

If we continue to indulge our fancy as to the ultimate possibility of material handling in the future, we can imagine a manufacturing plant that has been fully mechanized so that when an order is received in the morning's mail, a clerk punches a card order and places it in the console of the machine in his office. If the order card is punched "rush", the machine will take it—as soon as its previously started cycle is finished

—and process the new articles required, inspect them, make a record of the tests performed, package and label them, and send them to the shipping department for clearance papers. It will then return a signal to the office to show that shipment has been made.

This general survey of material handling applications and potentials has attempted to classify them in as many operations as possible. We have also tried to sketch, briefly, the present status of the art and to speculate, on the basis of reasonable extrapolition, what developments the near future will bring in the material handling field. That great progress in production will be made goes without question. Our way of life demands it. Economic necessity assures it. And the knowledge and technical ability of American industrial engineers are available to implement it.

Reference: "*Designing Emergency Control Into Monitor Circuits*", by F. R. Simpson, *Electrical Manufacturing*, February 1954.

Photos courtesy Allis-Chalmers Mfg. Co.; Link Belt Co.; Thew Shovel Co.

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YOUR BEST *Tip* IN CARTS

No. 119 *Sterling* HEAVY-DUTY CART

If you're looking for a good tip for wheeling coal, scrap, chips, turnings or similar heavy materials, see these Sterling Heavy Duty Carts. Over and over again the "3-Point Landing" feature of this well-balanced cart will convince you it's the best buy for years of service. Can be furnished with pneumatics, as shown, or steel wheels . . . plain or roller bearings. Write for Catalog.

3 SIZES AVAILABLE:

No. 119..... 7½ cu. ft.
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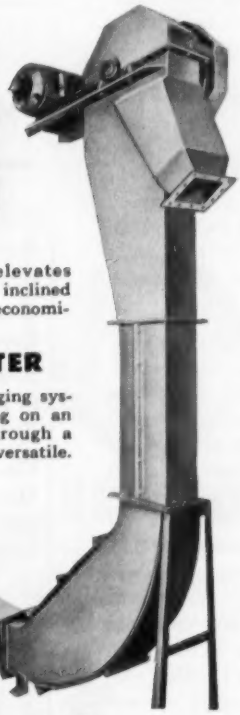
A HALF CENTURY OF PROGRESS

Sterling WHEELBARROWS

Look for this Mark of STERLING Quality

for bulk MATERIALS HANDLING



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Free! Write for G-W's idea book on engineered materials handling systems

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Save both with

JAKES SAFE-TOW TERMINAL TRUCKS

The more man hours you save, the more dollars you earn. And you save plenty by equipping your terminal warehouse with Jake's new terminal trucks for either manual or conveyor operation. Sizes 32" x 40" and 32" x 48"; either 6" or 8" wheels, rubber-tired or plastic. Sealed ball bearings and casters. Deck of safety floor plate. All-welded construction.

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Another *first* for Albion casters! A completely sealed caster that stays sealed... completely eliminating the need for periodic maintenance due to grease loss, dirt, debris, water or other foreign matter.

Albion casters have been completely redesigned to incorporate precision *moulded* Synthi-Rubber ring gaskets around the load raceways and the wheel axle ends. In addition, a formed steel, leakproof retainer cup is press-fitted over the thrust raceway . . . thus, Albion's *completely sealed* casters outlast ordinary casters and save your equipment dollars.

HERE'S WHY . . . Albion caster engineers would not accept the so-called "sealed casters" available which employed flat rubber, felt or steel baffles as "seals". As a result, they designed and developed precision *moulded* Synthi-Rubber gaskets to guarantee a truly sealed caster to solve your caster problems.

Albion's new completely sealed casters are available in a broad range of popular sizes and wheel types to suit your needs.

ai

Represented in Canada: C. J. McDonald Rear, 1564 Queen St., W. Toronto

ALBION INDUSTRIES, INC.

ALBION, MICHIGAN

Circle No. 7 on Reader Service Card

COORDINATION . . .

(*Continued from page 68*)

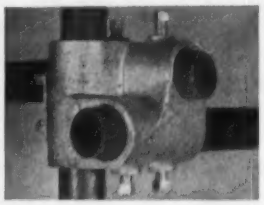
area and re-stack finished products in the outgoing storage area. The conveyor system reverses for outgoing shipments. This system of gravity and powered conveyors, coordinated with walkie trucks, is especially adaptable to small plants, since the capital investment is relatively low.

Light Floors. This multi-story plant is old, and both floors and elevators have limited capacity. All manufacturing is done on the ground floor, and raw materials and finished products are stored on upper floors. Incoming materials are received on uniform expendable pallets. Fork trucks unload the cars and place palletized loads on the dock where they are picked up by hydraulic pallet truck and placed on the freight elevator. Incidentally, ends of the pallets are painted various colors to designate type of material and floor on which material is to be stored. Hand pallet trucks unload the elevators and powerized walkie pallet stackers tier the goods on each floor. They also feed raw materials back to the first floor. Finished products are palletized, deposited on elevators by fork truck, removed by pallet truck, tiered by pallet stacker and stored. An intercommunication system connects the dock with each floor, so that flow of goods can be regulated at all times. In this plant, light and inexpensive equipment works especially well with heavy trucks.

Narrow Aisles. Although powered equipment manufacturers today are designing equipment which maneuvers especially well in narrow aisles, not all firms are equipped with these new units and must rely upon earlier models purchased before aisle width was recognized as an important cost factor. Here, the narrow, more maneuverable manual equipment plays an important part. And, since the warehouse serves entirely as a distribution point, a tow-line conveyor has proved highly successful. With this conveyor, which circles the entire storage area, warehouse trucks of all types, sizes and dimensions move continuously and

Circle No. 14 on Reader Service Card

MAKE YOUR OWN ADJUSTABLE RACKS with AMIDON FITTINGS And Your Own Standard One Inch Pipe



EASY TO PUT UP . . . EASY TO TAKE DOWN!

No pipe threads, bolts or studs required. Provides the most economical storage and pallet rack.

STRONG • ECONOMICAL • ADJUSTABLE

All first orders on trial basis.

WRITE FOR FREE FITTING BOOK

AMIDON ENGINEERING

ELYRIA 9, OHIO

MOVE MORE FOR LESS WITH MICRO LEVER-DOLLIES

Immediate Delivery

Made in Three Handy Sizes

Usually Purchased and Used in Pairs

Reasonable in Price and Guaranteed

Finest Materials and Workmanship.

After First Use You'll Wonder How You Ever Got Along Without Them

Write for complete descriptive circular

MICRON, INC., Dept. F BETTENDORF, IOWA

Rubber Wheels Optional

Circle No. 106 on Reader Service Card

may be attached to or detached from the line at any point. Since order picking from stock shelves is one-way, going down one aisle and up the next, order-picking aisle space need only be the width of the trucks plus a few inches for clearance. Trucks are detached from the tow line at the packaging area, where goods are assembled on gravity conveyor for shipment. Furthermore, detached warehouse trucks are often used throughout the building for a variety of jobs. Outgoing material is palletized and loaded into trailers or rail cars by fork trucks, which also unload incoming shipments.

Long Hauls. Manufacturing facilities, storage areas and buildings themselves are widely separated, so industrial trucks, including fork trucks, trailers and personnel carriers, are employed to cover these long distances quickly. Trucks are radio controlled, making the operation faster, better coordinated and more profitable. Manual equipment of all types, from two-wheel hand trucks to stackers, also is utilized, each performing a specified job in a small

Circle No. 134 on Reader Service Card for more information

MILDER
...AND DRAWS EASILY

Toting is a "pipe" with George!

For safe, low-cost, effortless handling of tote boxes, you can't beat "George." Note how easily you "back-up, hook-up, roll-up and roll away" one or more heavily laden tote boxes, by means of simple leverage action. No dangerous lifting, no strain. The rear beveled edge of the truck and the upper set of rollers do the loading when truck handle is pulled forward . . . traction bottom rollers carry truck to destination. Simple?

Make this good investment today. Cost is low . . . truck life long...satisfaction certain.

LET "George" DO IT

"George"
THE TOTE BOX TRUCK

*TRADEMARK

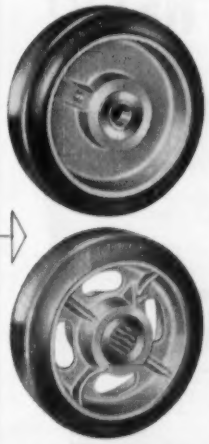
Write for free folder F
ROLOCK Inc. ● Fairfield, Conn.

designed for every need
built for longer service

BRONCO
INDUSTRIAL WHEELS

"with the tire that won't roll off"

General purpose, special service, spoke or disc type... no matter what your needs Bronco Industrial Wheels are designed to meet your requirements. Only with Bronco do you get tough, lightweight, aluminum construction with rubber tires molded on by Bronco's exclusive bonding process.



BRONCO
magnesium
BRIDGE RAMPS

Easy to handle Bronco carloading or truck ramps will speed up loading and reduce handling costs. The exclusive "Underside Design" of Bronco ramps provides greater strength, longer life, minimum weight and a low initial cost.

Write today for your illustrated brochure on Bronco Industrial Wheels or Bronco Ramps

BRONCO PRODUCTS CO. 717 Stanford Ave., Los Angeles 21, Calif.

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LOW COST, RUGGED
Hydraulic
SKID TRUCKS
for loads up to 1000 lbs!

★ HYDRAULIC RAISING & LOWERING
★ PUSHES OR PULLS
★ FLOOR PROTECTIVE WHEELS
★ ALL STEEL WELDED CHASSIS
★ LIGHT WEIGHT
★ COVERED STEEL PLATFORM USED AS PLATFORM TRUCK

● Fully illustrated bulletin HST-19 describes this versatile truck in detail. Write for it today. Catalog GP-17 describing many standard Ironbound cost-saving units will be sent you without obligation, too.

IRONBOUND BOX & LUMBER COMPANY
30 Hoffman Place, Hillside, New Jersey

Ironbound — IRONBOUND

MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS, FLOOR TRUCKS, SKID TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

Circle No. 82 on Reader Service Card for more information

COORDINATION

Continued

area. Material is carried to the docks or aisles by manual units and picked up by powered trucks for quick movement down aisles, up ramps and across yards.

Actually, the few examples outlined here merely serve to point out the fact that there's no end to the possibilities of coordinating manual and mechanical equipment. Most significant is the realization that both types have their place in industry. And, as we enter a new push-button era, it seems unlikely that either manual or mechanical equipment as we know it today will be replaced completely.

Rather, automatic machinery, too, will find its place and coordinate its efforts with present equipment.

FLOW thanks the following for pictures used in the preceding article: The Buda Co.; Clark Equipment Co., Colson Corp., Hyster Co.; Lewis-Shepard Co.; Nutting Truck & Caster Co.; Raymony Corp; Towmotor Corp.; Yale & Towne Mfg. Co.

Circle No. 43 on Reader Service Card

KING-SIZE NESTIER

NOW AVAILABLE!

NesTier meets industry's demand for a materials handling box midway between a tote pan and a heavy corrugated bin-type container. The new No. 360 is sturdily constructed of 14-gauge steel, is 36" long, 14" high, 16½" wide. Filled units tier in rigid stacks . . . empty boxes nest without sticking or jamming to save valuable floor space.

NesTier materials handling boxes and baskets are available in a variety of sizes — 12" long and larger — to fit into your materials handling picture from stockroom through assembly and production to shipping dock.

C-186-DH

WRITE TODAY FOR COMPLETE DETAILS

NESTIER

THE CHAS. WM. DOEPKE MFG. CO., INC.
8836 Blue Ash Road • Rossmoyne, Ohio

TOW-LINE SYSTEMS CUT HANDLING COSTS 25% TO 35%

One of seven Nutting tow-line systems currently saving 25% in cross-dock handling alone for Consolidated Freightways, Inc.

Freight and materials handling costs have been cut 35% and sometimes more in terminals and warehouses equipped with Nutting Tow-Line truck systems. Nutting Trucks built to your "specs" can be filled off-line, then rolled to the line where they are engaged to the conveyors for movement to the next operation.

Nutting towline truck systems greatly simplify materials handling problems! In truck and railway terminals they effect big savings in cross-dock handling, reduce freight damage and speed up departure schedules with fewer astray shipments.

In warehouses, order picking operations are speeded up. One-way truck flow avoids confusion and eliminates costly multiple handling. Loaded trucks move to unloading bays . . . empties return to pickers and order fillers . . . all automatically!

This grocery warehouse installation is cutting handling time and speeding up delivery 35%.

Investigate this up-to-date method of handling materials. You'll discover too, that Nutting Trucks for tow-line systems, like all their more than 1000 models, have exclusive construction features that give you longer wear, lower cost maintenance and easy, trouble-free operation. Rugged construction from bar handles to demountable, free-wheeling rubber tires prove Nutting's QDC-64—*Quality, Design* and *Construction* for 64 years.

To get the complete towline story look under "Trucks" or "Casters" in your classified phone directory for your Nutting representative or write for Bulletin 54 TL.

NUTTING TRUCK & CASTER COMPANY
1609 Division Street • Faribault, Minnesota
Materials Handling Specialists Since 1891.
Export Sales Rep.: Scheel International, Inc.
4237 No. Lincoln Ave., Chicago 18, Ill.

Circle No. 118 on Reader Service Card

HERE'S HELP!

INVESTIGATE Hapman Neoprene-Flighted, Sealed-Pin Chain Tubular Conveyors. They move almost any flowable material, wet or dry, through any plane or angle. Dust-proof, liquid and odor tight.

Write today for Catalog F-75.

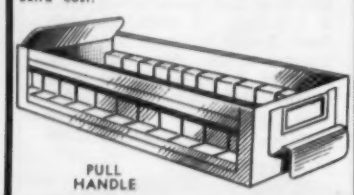
Hapman CONVEYORS, INC.
Division Hapman Dutton Company
922 Gibson St., Kalamazoo, Mich.

Circle No. 71 on Reader Service Card

IMMEDIATE SHIPMENT

BAY ADJUSTABLE COMPARTMENT DRAWER

Bay adjustable compartment shelf drawers are ideal for handling and storing various quantities of small parts. Drawers are slotted on 1" centers to accomodate dividers. Label holders on front of each box makes identification of contents easy, greatly speeding material handling. Designed with backstops, which prevent drawers from dropping accidentally. Drawers may easily be removed by pulling boxes outward and upward; finished in baked green. Dividers furnished at slight extra cost.



Product Number	Width	Length	Height	Price Green
91BCH	5½"	11¾"	2⅝"	1.05
92BCH	5½"	17¾"	2⅝"	1.21
93BCH	8½"	11¾"	2⅝"	1.16
94BCH	8½"	17¾"	2⅝"	1.32

F. O. B. Factory Philadelphia
MANY OTHER BAY PRODUCTS AVAILABLE
COMPLETE CATALOG
PRICE LIST ON REQUEST
PHONE • WIRE • WRITE
BAldwin 9-1805

BAY PRODUCTS INC.
1561 W. Indiana Ave. Phila. 32, Pa.

Circle No. 32 on Reader Service Card

NEW EQUIPMENT . . .

(*Continued from page 56*)

New High Lift Walkie

Clark Equipment Company has added a line of battery-powered, tilting high lift walkie trucks to its Powrworker series. Called the Hi-Lo Stacker, capacities to 3000 pounds are available on 24 inch load centers. Standard units have an 83 inch overall height, 130 inch maximum fork height and free lift of 64 inches. For highway truck loading, an overall height of 68 inches is standard with a free lift of 49 inches and maximum fork lift of 100 inches.

Circle 271 on Reader Service Card for more information

Cushioned Conveyor Rollers Protect Delicate Products

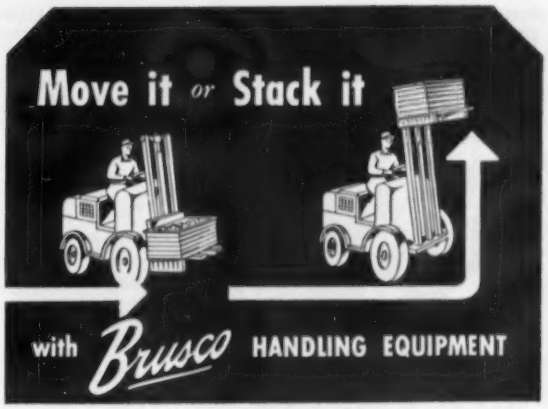
All-neoprene conveyor rollers can save you money, says Stilson Tool, Inc., if your product is sensitive and needs protection from dents and scratches. The molded rollers have even density throughout, insuring uniform wear, longer life and less down time, according to the manufacturer. Parts and mountings are interchangeable and installation is said to be simple and fast.

Circle 272 on Reader Service Card for more information

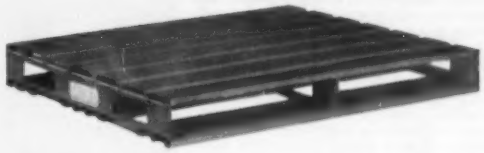
New Caster Line

Light and medium casters are now available from The Gleason Corporation, manufacturer of semi-pneumatic and solid rubber wheels and industrial and commercial casters. Wheel sizes range from 2½ to five inches, and tread width of ¾, 1 and 1¼ inches may be specified. The casters conform to industry standards of design, construction and specifications.

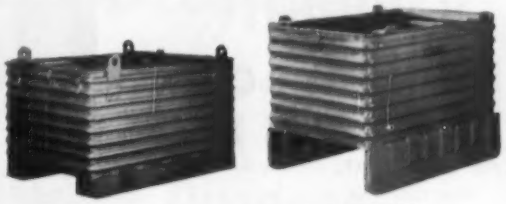
Circle 273 on Reader Service Card for more information



No. 930 BRUSCO PALLET



For general use in moving and stacking materials, cartons and containers. Special attention is called to large bearing surface of the bottom of the pallet. This feature assures easier and safer handling and makes the pallet adaptable for many uses. Fabricated of heavy or light gauge steel depending on your requirements. Simplicity of design and rugged welded construction make for long productive life with no maintenance cost. Can be furnished with or without fork openings for 4-way entry.



No. 558 **No. 559**

BRUSCO Corrugated Skid Boxes

Also manufacturers of:

BOXES - SKIDS - PALLETS - RACKS

BRUSCO self dumping hoppers

When requesting price information, please give dimensions, load capacities and quantities.

Brusco HANDLING EQUIPMENT

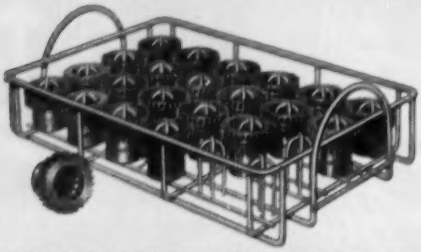
BRUMMELER STEEL PRODUCTS CORP.

1410 Ionia Ave., S. W., Grand Rapids, Mich.

Circle No. 28 on Reader Service Card for more information

Circle No. 166 on Reader Service Card for more information

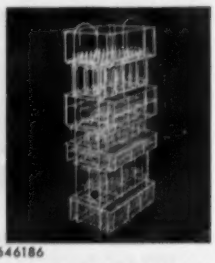
EEZY-STAK BASKETS
for Better Parts Handling



EEZY-STAK BASKETS SIMPLIFY PARTS HANDLING...CUT COSTS...REDUCE REJECTS!

WIPCO manufactures a complete line of Custom-Designed stacking (Eezy-Stak) and non-stacking baskets for handling all types of parts through every production and assembly process. WIPCO baskets can be made in any desired size or shape, and from any practical material.

Eezy-Stak baskets feature the exclusive Interlock Handle* which permits easy and safe stacking. Eezy-Staks are available in a wide range of standard sizes and metals which fit most parts-handling requirements. Write today for Bulletin B-54.



*Pat. No. 2646186

WIPCO BASKETS... *FROM INITIAL MACHINING TO FINAL ASSEMBLY AND SHIPPING*

WIRE AND IRON PRODUCTS INC.

1720 SIXTEENTH ST. • DETROIT 16, MICHIGAN

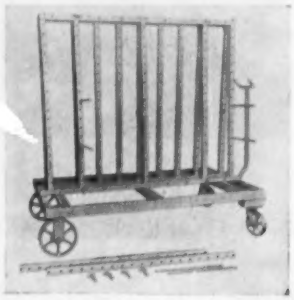
Small, Powerful Cleaner

An industrial vacuum cleaner claimed to have unusual pickup power on big wet or dry cleanup jobs is claimed by Multi-Clean Products, Inc. for its new model G-400. The cleaner is equipped with a 1 hp 115 volt ac-dc by-pass motor and two-stage turbine that create a suction equal to 63 inches water lift with closed orifice. The all-welded steel tank holds ten gallons of wet or one-and-a-half bushels of dry pickup material.

Circle 274 on Reader Service Card for more information

Adjustable Peg-Rack Truck

An adjustable peg-rack truck has been developed by Rack Engineering Company for the handling of costly, bulky or difficult-to-stack items. Movable pegs support the products. Standard truck base is 24 by 60 inches with 66 inch high uprights. Pegs are adjustable on three inch centers and uprights on six inch centers. Rigid and swivel casters assure easy mobility. Standard capacities are from 1000 to 3000 pounds.



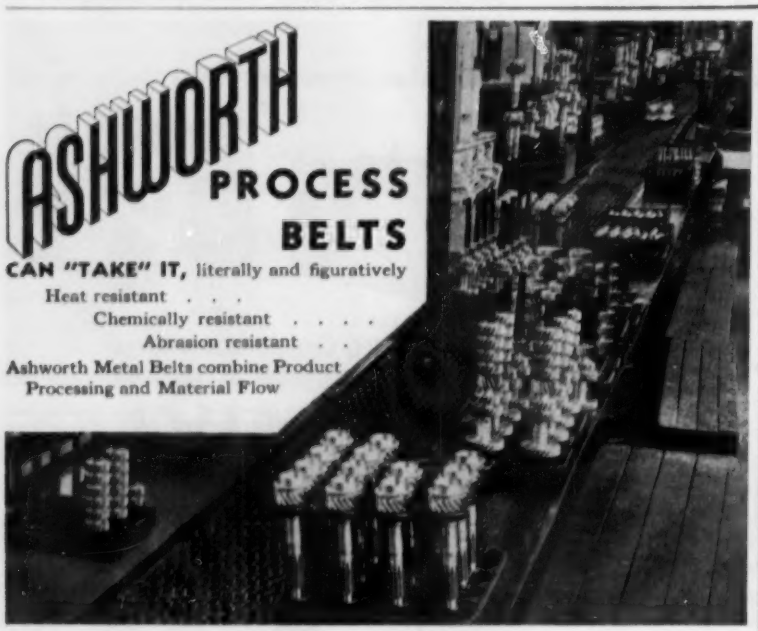
Circle 275 on Reader Service Card for more information

ASHWORTH PROCESS BELTS

CAN "TAKE" IT, literally and figuratively

Heat resistant . . .
Chemically resistant . . . .
Abrasion resistant . .

Ashworth Metal Belts combine Product Processing and Material Flow



Keep Your Product on the Move

ASHWORTH BROS., INC.
METAL PRODUCTS DIV. • WORCESTER, MASS.

Sales Engineers: Buffalo • Chattanooga • Chicago • Cleveland • Detroit • Kansas City • Louisville • Los Angeles • New York • Philadelphia • Pittsburgh • Rochester • Seattle • St. Paul • Tampa
Canadian Rep., PECKOVER'S LTD. • Toronto • Montreal

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FREE 54 PAGE CATALOG

DeLuxe

STEEL SHELVING *. . . and* **FACTORY FURNITURE**

WRITE FOR YOUR COPY TODAY!

DELUXE METAL FURNITURE CO.
300 Struthers St., WARREN, PA.

Circle No. 44 on Reader Service Card

Aluminum Chain Blocks

Lightweight, portable aluminum chain blocks are being marketed by the Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Inc. Available in capacities up to 10 tons, they were developed especially for rugged service where low headroom, portability and ease of operation is required. Many features contained in the new chain blocks insure continuous, trouble-free performance and safety under the most unfavorable conditions, according to the manufacturer.

Circle 276 on Reader Service Card for more information

Electronic Metal Detector

A metal detector built for both general industrial service and mining service, where extremely deep burdens may be encountered, is available from Dings Electronics, Inc. Said to be sensitive to all magnetic metals, and some non-magnetics,

Circle No. 90 on Reader Service Card for more information

LANGE Hydraulic LIFT

VERTICAL LIFT from 6" to 30"

LIFTS STRAIGHT UP

MODEL 2000
TOP SIZE
24" x 60"
•
CAPACITIES
1000 to 6000 LB.
STANDARDS
•
LOWERS TO 6"
RAISES TO 30"
•
WEIGHT APPROX.
375 LBS.
•
OTHER MODELS
LIFT TO 30 TONS
•
FOOT, HAND
ELECTRIC AND
AIR-POWERED
MODELS
•

HUNDREDS OF TIME-SAVING USES

RECESSED TO FLOOR LEVEL
PERMANENTLY BOLTED DOWN
LEFT FREE TO SLIDE ANYWHERE
MOUNTED ON WHEELS

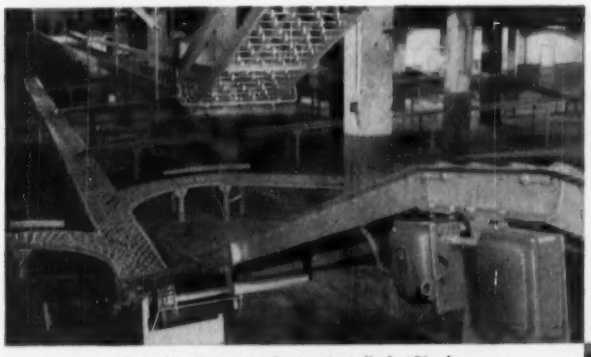
for loading and unloading • positioning machine feeding • materials handling die handling • conveyor applications

LANGE Hydraulic "L" TABLE

Keeps work at work-height as a feed table. Supports and levels sheets and bars. Transports dies. Rotation Lock holds any position while top remains free to move up and down. Top 30" x 30". Table height lowered 27", raises to 45".

MODEL L-1000 Standard Capacities of 1, 2, 3, 4, 5 and 6000 LBS.

Write for Bulletins . . . **LANGE-LIFT COMPANY**
4275 N. 124TH ST. • MILWAUKEE 10, WIS.



Farquhar Conveyor System installed at Piggly-Wiggly Midwest Co., Rockford, Illinois.

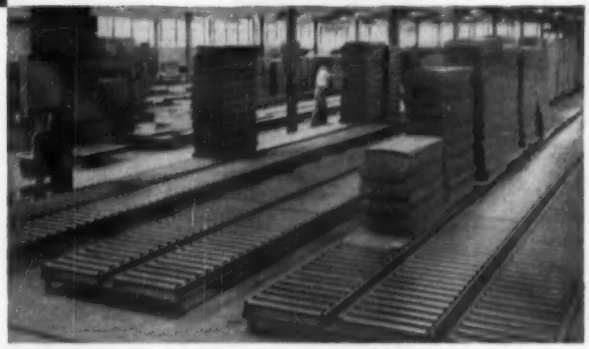
Farquhar

power-belt and gravity

CONVEYORS

Pay Dividends

Here are two fully integrated materials handling systems that illustrate how Farquhar Power-Belt and Gravity Conveyors are engineered to effect savings in a wide variety of bulk or package handling problems. Farquhar is a good buy for you, too. It will pay you to get the facts now!



Farquhar Conveyor System installed at York Container Company, York, Pennsylvania

OLIVER Farquhar CONVEYORS

A. B. FARQUHAR DIVISION
THE OLIVER CORPORATION

Conveyor Dept. E-06
York, Pa.

618 W. Elm St.
Chicago 10, Ill.

Write for Bulletin Nos. 400 & 401 covering Farquhar Power-Belt and Gravity Conveyors.

Circle No. 55 on Reader Service Card for more information

Circle No. 53 on Reader Service Card for more information

Take advantage of Equipto's Free Layout Service to obtain valuable advice on the number and type of storage units to buy . . . complete floor plans and elevation drawings showing best way to arrange units within your allotted storage area. You will thus be able to make maximum use of your floor space, save steps, speed customer service, and simplify inventory and stock control.

If you would rather lay out your own facilities, send for fact-crammed, fully illustrated booklet, "How to Solve Your Storage Problems."

Both "assists" are further evidence of Equipto's primary concern with providing super-efficient storage facilities—not in merely selling equipment.

Equipto Division of Aurora Equipment Co.

805 Prairie Avenue, Aurora, Illinois

Steel Shelving . . . Parts Bins . . . Drawer Units

ANOTHER FIRST FOR

SILENT HOIST KRANE KAR

FLUID DRIVE!

Write for New Illustrated Bulletin No. 79D

Silent Hoist gave you *KRANE KAR*, the first modern Mobile Crane . . . Front-Wheel Drive . . . Stability without Stabilizers . . . Lifetime Front Axle . . . Automatic Safety Controls. And now *Silent Hoist* gives you FLUID DRIVE!

✔ Increases engine clutch life. ✔ Provides cushioned starting and acceleration. ✔ Eliminates overload shock damage to drive gears. ✔ Speeds operation. ✔ Cuts maintenance drastically. ✔ Prolongs tire life.

Ask about the New Lease-a-KRANE KAR Plan . . . 1 to 3 Year Lease with Option to Purchase

KRANE KAR Swing-Boom Industrial Truck Crane . . . 1½, 2½, 5, 10, 12½ Ton Cap.

SILENT HOIST & CRANE CO.

Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment

888 63rd Street, Brooklyn 20, N. Y.

Circle No. 141 on Reader Service Card for more information

the detector immediately and automatically signals their presence, thereby protecting machinery and product quality against tramp metal damage. Design, installation and operation of the metal detector is extremely simple, requiring no attention, according to the manufacturer.

Circle 277 on Reader Service Card for more information

3000 Pound Capacity Reach Fork Truck

Three thousand pound loads may be lifted by the new Raymond Corporation Reach Fork Truck. The truck incorporates a heavier carriage and uprights, larger rams and a revised power unit, plus the regular features of the original 2000 pound model. It will operate in six foot aisles and handle pallets or skids of varying sizes. The unit is said to work especially well in bulk storage and rack areas, freight cars and trailers, among other applications.

Circle 278 on Reader Service Card for more information

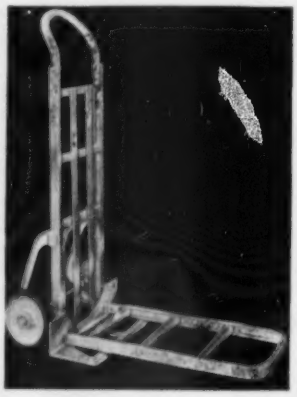
Kit Converts For LP-Gas Use

Users of gas-powered Clark fork trucks can have their machines adapted to liquified petroleum gas power through installation of a conversion kit available from Clark Equipment Company. Items furnished with the kit are individually UL-approved.

Circle 279 on Reader Service Card for more information

Hand Truck's Utility Increased

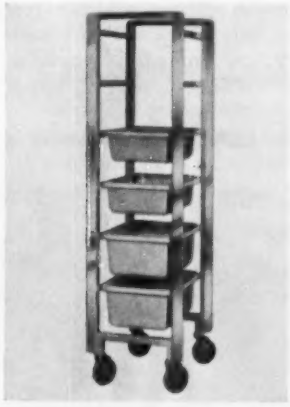
Magline, Inc. is offering a folding nose extension on standard magnesium hand trucks which is said to greatly increase the truck's utility. When lowered for use, the unit extends forward, beyond the nose, quickly adapting the truck for handling bulky or unusual-shaped loads. In the raised position the extension rests flush against the truck side members, leaving the regular nose unit free to handle conventional loads.



Circle 280 on Reader Service Card for more information

Mobile Parts Rack

A mobile tote box rack for assembly line work and storage of small parts is offered by Crescent Metal Products, Inc. Constructed of either aluminum or magnesium, the unit is equipped with five inch neoprene casters for extreme mobility and light weight. Assembly work is said to have been speeded-up as much as 40 percent through use of the racks. Portable or stationary, single or multiple units are available. Single unit dimensions are 70 inches high, 30 inches wide, 18½ inches deep.



Circle 281 on Reader Service Card for more information

Packaged Components For Steel Belt Conveyors

A plan for providing pre-engineered packaged components for steel belt conveyors has been announced by Sandvik Steel Belt Conveyor Division of Sandvik Steel, Inc. Users of steel belt

Circle No. 38 on Reader Service Card for more information

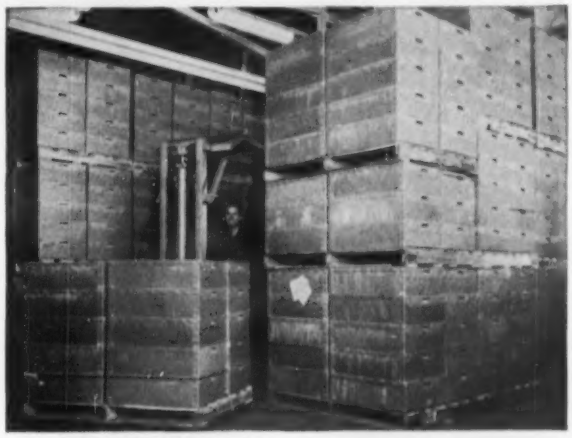
CAN YOU THINK OF A BETTER WAY TO HANDLE MATERIALS?

CONVOY'S CHEMBOARD* SELF-STACKING TOTE BOXES *MAY BE YOUR ANSWER*

Convoy Boxes are LOW COST, STRONG and LIGHT WEIGHT . . . are made in a wide range of stock sizes and shapes. They weigh and cost less than 40% of steel.

*Chem-Board is Convoy's chemically impregnated corrugated board . . . flint-hard, rock-strong.

Here's an example of Convoy Self-Stacking Boxes speeding production, conserving space, saving money.



GET IN TOUCH WITH

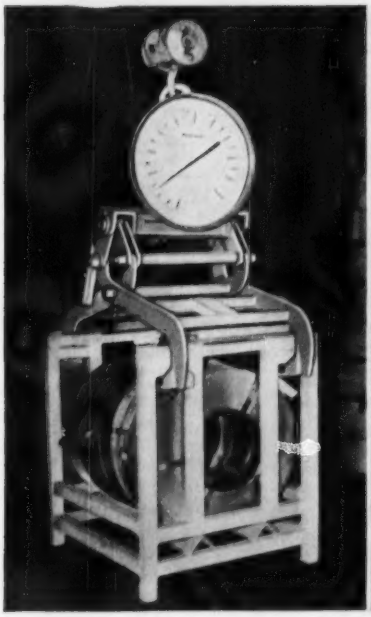
CONVOY, INC.

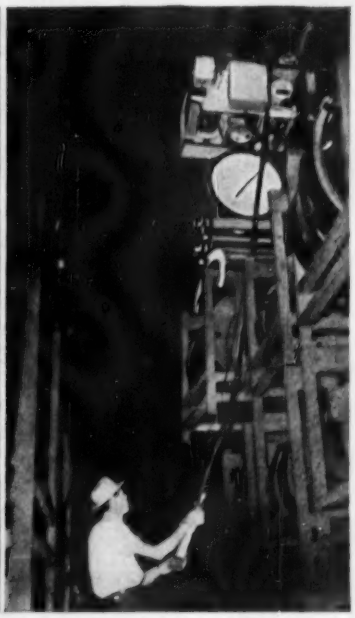
CANTON 6, OHIO

P. O. Station B, Box 216-F

STANDARD AND CUSTOM-MADE NESTING, STACKING, and VERTICAL-SIDED CHEM-BOARD TOTE BOXES

MANSAVER GRABS Automatic—Motorized—Manual





Automatic pickup, automatic delivery high overhead with minimum clearance.

Though the Mansaver shown here is a fully automatic rack grab for handling coils, Mansaver rack-handling grabs are also motor-driven and manually operated, each engineered for a particular application.

The automatic grabs can be used for one size of rack or tote pan only, without much loss of space. The manual and motor-driven styles handle racks and pans of various sizes, and are made with hand or motor-operated turntables, to save space. Motor-driven Mansaver Grabs can be controlled by the crane operator more easily than can the automatic types.

Mansavers have been built up to 100,000-lb. capacity. Name your need. We'll meet it.

★ **MANSAVER INDUSTRIES, INC. • 3103 EAST ST., NEW HAVEN, CONN.** ★

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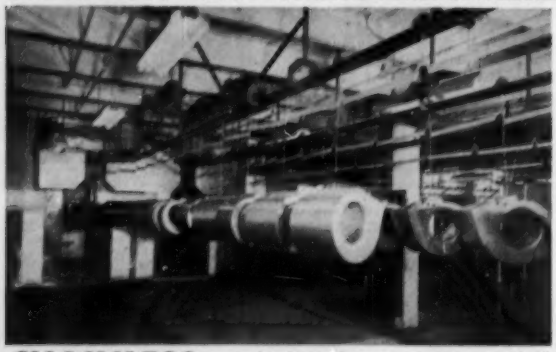
Circle No. 89 on Reader Service Card for more information



CHAINLESS CONVEYOR Cuts Labor Costs 50%

Increases Capacity
Improves Finish

Recommended for loads up to 100 lbs. per ft.

A leading furnace maker slashed paint-spraying labor costs 50% with the Landahl CHAINLESS Conveyor! Elimination of second shift brought more uniform finishing. Capacity of the paint room was increased 33%. Conveyor has no chains, no cables, no take-up troubles. Unique steel-rod connectors pivot freely at both ends on self lubricating ball-and-socket joints. Makes shorter turns, weighs less, has fewer parts. Powered by special Landahl caterpillar drive.

Send For Bulletin G-100

LANDAHL Chainless CONVEYORS

The LANDAHL CONVEYOR CO., 13129 Athens Ave., Cleveland 7, Ohio
A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY

YOUR BEST MOVE IS TO MOVE WITH
MERRILL
MATERIAL HANDLING DEVICES

For Interesting Information write

MERRILL BROTHERS

56-74 ARNOLD AVE., MASPETH, N. Y.

Circle No. 105 on Reader Service Card for more information

conveyors, through use of the plan, can engineer a complete conveyor merely by selecting the right pre-engineered components to meet given requirements. Typical packaged components include drive end and tension end assemblies, steel belts, discharge devices, safety devices and loading hoppers, all ready for immediate installation on new or suitable existing supporting structures.

Circle 282 on Reader Service Card for more information

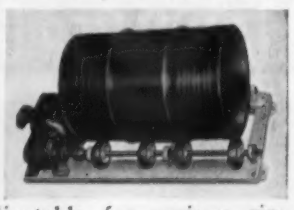
Electric Die Handling Unit

Dies as heavy as 6000 pounds can be handled by a new four way entry attachment available from The Moto-Truc Company. Action of the attachment is controlled electrically by remote control push buttons. Loads on the truck may be pushed and pulled four ways. The attachment may be fitted to any standard Moto-Truc lift truck. Power is supplied by an 18 volt battery.

Circle 283 on Reader Service Card for more information

Rotates Drums

Loads up to 1000 pounds may be rotated with the new drum Rotator manufactured by Morse Manufacturing Co., Inc. The Rotator can be used for agitating, mixing and tumbling in the original container. Idler wheels are adjustable for various size drums.



Circle 284 on Reader Service Card for more information

Swinging Axle and Caster Feature New Mounting

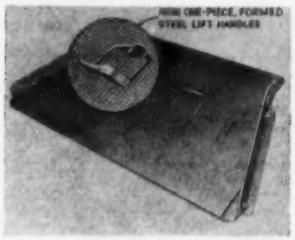
Manufacture of a new type of caster wheel mounting assembly is announced by Bronco Products Company. Casters are mounted on an axle which is pivotally mounted on a vehicle. Casters may be locked to prevent individual swiveling and the axle may be locked to prevent pivoting. When steering arm is in towing position, wheels are locked in pulling position and directed by control of the axle. When steering arm is up, axle is locked in position on the truck and wheels

are released for full caster type operation. Faster rate of travel, protection of wheels and safer operation are advantages pointed out by the manufacturer.

Circle 285 on Reader Service Card for more information

Bridge Ramp Features Lift Handles

One piece formed lift handles, a new modification on the One Man bridge ramp, are offered by Elizabeth Iron Works, Inc. Said to be virtually unbreakable and capable of withstanding hardest use, the steel handles accommodate the forks of any standard fork truck. When not in use, the handles drop into recesses in the ramp riding surface. In raised position, they permit the truck to transport the ramp to and from location. Load capacity of the ramp is 15,000 pounds and span is from five to 58 inches.



Circle 286 on Reader Service Card for more information

Trucks Feature Centralized Lubrication

Two systems of centralized lubrication are offered by Automatic Transportation Company as accessories for standard model electric industrial

For low cost material handling you can't beat **TULSA®**
HYDRAULIC DRIVE WINCHES

New, lightweight hydraulic drive winches quickly solve any material handling problem with ease. These versatile winches can be installed on fork lifts, highway trucks, wreckers or in stationary locations. Ideal for smooth truck loading and unloading and for moving materials and equipment. Capacities available from 2,500 to 5,800 lbs.

SEE YOUR NEAREST TULSA WINCH DISTRIBUTOR FOR FULL INFORMATION

Tulsa® Winch
TULSA, OKLAHOMA DIVISION OF VICKERS Inc.

Circle No. 152 on Reader Service Card for more information

POWER STEERING
STANDARD ON NEW truck-man W-40
*TWO TON HIGH-LIFT

THE DRIVER IS BOSS—Not the truck. Power steering means one finger turning, even at a standstill—Reduces operator fatigue and increases efficiency. No tripping over levers or hoses getting on or off either, all dials and levers are just inches below the steering wheel where they belong for effortless handling and added safety. Tilting mast (10° backward, 3-5° forward), speedy lift and 6 inches of free lift complete the picture of a real material handling tool.

POWERHOUSE ON WHEELS—The sturdy, 4 cylinder, industrial engine produces 40 Brake Horse Power — Oversized clutch, transmission and Timken drive axle deliver it without strain. Extra wide tires, front and rear provide the traction to take full advantage of it. Speeds up to 8 mph., forward or reverse.

COMPACT—Intersecting aisles need be only 64" wide. Only 38" x 76¼" (less forks), the W-40 turning radii are only 2" inside and 71" outside.

A SOFT TOUCH FOR MECHANICS, TOO—Here's a truck *designed* for economical maintenance. Tilt cylinders, engine, transmission, clutch and other wear parts are easily worked on or removed.

VERSATILE—Standard Lift is 108"—others to order. A wide variety of fork styles and attachments are also available.

LOTS OF OTHER FEATURES—including: double acting hydraulic brakes, honed tilt and lift cylinders; but why not get the complete story? Even with power steering and extra capacity the W-40 costs less. Call your Truck-Man dealer or write today for folder and price information on the NEW TRUCK-MAN W-40.

OTHER truck-man TRUCKS
MODEL Y-40—TWO TON, OUTDOOR HIGH-LIFT
MODEL DHP—4500 LB., LOW LIFT SKID TRUCK
MODEL DFP—3000 LB., LOW LIFT PALLET TOTER

truck-man
DIV. OF THE KNICKERBOCKER CO.
582 LIBERTY ST., JACKSON, MICHIGAN

Circle No. 150 on Reader Service Card for more information

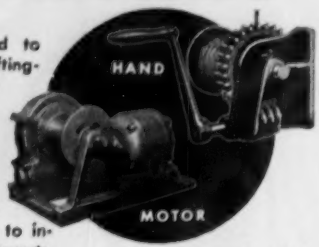
Circle No. 143 on Reader Service Card for more information

lift heavy loads quickly and easily with

HAND AND MOTOR

S-A WINCHES

Engineered and designed to give you dependable lifting-power when and where you need it. S-A features a size and type (in stock) to meet your specific requirements. Get the facts on how these sturdy hand and motor winches will help you to increase efficiency and lower costs.



WRITE TODAY FOR CATALOG 853

IN STOCK FOR IMMEDIATE DELIVERY

STANDARD PRODUCTS DIVISION
STEPHEN S-ADAMSON MFG. CO.
36 Ridgeway Ave. Aurora, Illinois

Why pay more?

Specify the RACK

TURNABOUT®

ADJUST-A-FORK

HYDRAULIC LIFT TRUCK

featuring Overload Safety Valve!

The low cost, high quality Turnabout will save you many dollars in your pallet handling operations. Interchangeable forks supplied in five standard lengths — 30", 36", 40", 42" and 48". Also available in 54" and 60" lengths, if desired. Capacity: 2,500 lbs.

Write for Bulletin today!

RACK Hydraulic Equipment Corp.

131 Sixth St., Connellsville, Pa.

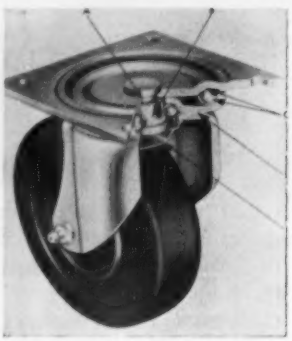
Circle No. 112 on Reader Service Card for more information

trucks. For self-greasing, a small grease reservoir and injector are mounted on the truck. By pushing the injector plunger twice a day, the system is kept charged. The other system features easily accessible fittings at two points on each side of the chassis which service all trail axle and steering connection pressure fittings.

Circle 287 on Reader Service Card for more information

Retains Bearing Grease

Series H99 and S99 casters now have as standard equipment a new snap-on grease retainer cup which prevents lubricant from draining out of caster swivel bearings. The casters are products of The Bassick Company. Retention of swivel bearing grease not only prolongs service life of the caster, but also protects floors and caster wheel treads from the harmful effects of dripping grease, claims the manufacturer.



Circle 288 on Reader Service Card for more information

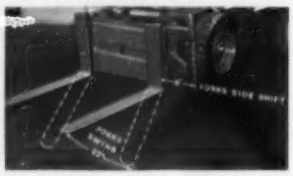
Light Duty Rollers

A light duty one-and-three-quarter inch diameter Rapid-Roller gravity conveyor series is announced by The Rapids-Standard Company, Inc. The new roller uses standard Rapid-Wheel and Rapid-Roller connectors, allowing sections to be used in conveyor lines with these models.

Circle 289 on Reader Service Card for more information

Swing-Shift Forks

Fork truck operators can both swing and shift loads into alignment without moving the truck through use of a new hydraulic operated attachment. Manufactured by Swing-Shift Manufacturing Company, the attachment is said to speed loading and unloading operations and reduce clutch and motor wear. The truck can operate in narrower space than normally required, since the forks turn corners ahead of the truck. Available in capacities up to 20,000 pounds, side shifting ranges from 8 to twelve inches; swings from 20 to 24 degrees.



Circle 290 on Reader Service Card for more information

Cable-Suspension Idler

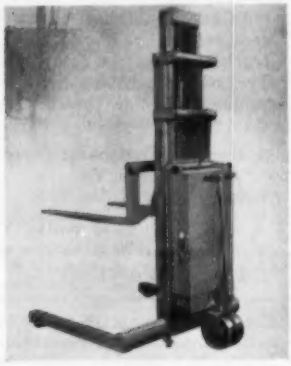
The Limberoller, a cable-suspension idler for belt conveyors, is offered by Joy Manufacturing Company. It provides a load-conforming catenary, cushions the belt, and handles both bulk and

packaged materials. The idler uses only two bearings and carries the belt on resilient, pressure-molded neoprene discs, all of the same size and all revolving at the same peripheral speed. The Limberoller permits conveyor heights from 13-¼ inches to 15-¾ inches, and is available for belt widths of 24, 30 and 36 inches.

Circle 291 on Reader Service Card for more information

Lightweight, Maneuverable Stacker

An electro-hydraulic telescopic straddle stacker is offered by Lewis-Shepard Products, Inc. Designed for small compact warehouses or to supplement power equipment, the lightweight, maneuverable stacker is equipped with telescopic mast and carriage which stacks to a height of 130 inches. Forty inch long forks are adjustable from 16 to 31 inches outside. Lifting speed is 10 fpm with a 2000 pound load. Electro-hydraulic power is furnished by a storage battery with a built-in charger.



Circle 292 on Reader Service Card for more information

Production Machine Helpers Convey Small Parts

Production of a new line of Press Helpers has been announced by Metzgar Conveyor Company. Designed to convey small parts away from production machines and presses, the units feature hydraulic ram adjustment at the discharge end for absolute accuracy of discharge height. Automatic trap loading eliminates flippergates, prolongs belt life and prevents clogging. Called the 675-J series, standard belt widths of five, eight, 10 and 12 inches are available with variable speeds from 30 to 90 fpm. Drive is by electric motor.

Circle 293 on Reader Service Card for more information

Your Inquiries Get Immediate Attention!
Use The Reader Service Card Bound Into This Issue.

Rugged and Versatile

Model JRF-½

Phil-Dump Jr.

Sturdily built to withstand rough fork truck service, the versatile Phil-Dump Jr. is still designed and sized for speed and convenience when propelled by hand. Features a self-dumping hopper which returns to loading position—automatically locks after emptying. Tires are hard rubber—rear wheel castered. Capacity one-half cubic yard.

Write for Bulletin E-1a.

Phillips

DIVISION

Salem-Brosius, Inc.

13 Arch Street • Carnegie, Pa.

Manufacturers Since 1863

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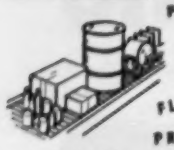
Circle No. 95 on Reader Service Card

USE IT 3 WAYS ..and More!

ARMORBELT Flat Top Metalbelt Conveyor



PACKAGE CONVEYOR
MULTI-LEVEL
VERTICAL CONVEYOR
FLOOR CONVEYOR
PRODUCTION LINE

The only sectional belt designed for quick and easy assembly. Fully enclosed construction for safe, clean, quiet operation—ball bearings for maximum efficiency—many additional features.

● *Standard Accessories*

UNIT LOADS TO 500 LBS./SQ. FT.
SPEEDS TO 80 FT./MIN.
WIDTHS 6"—10 FT.
LENGTHS 3—200 FT.

Write for illustrated catalog

M-H STANDARD CO.
51 S COMMUNIPAW AVE JERSEY CITY 4, N. J.

CLASSIFIED ADVERTISING

HELP WANTED

Sales Executive wanted by Fork Truck Leasing Company located in the East, to head up Sales Department. Must have proven sales record. Thorough experience in Materials Handling Equipment and its application required. Please submit complete resume. Write c/o FLOW, Box 7255.

PACKAGING ENGINEER

Excellent opportunity available with well-established leader in the resilient floorcovering industry for man with 6 to 8 years experience, the greater majority of which should be in general packaging. Must be familiar with container design and specifications; heavy packaging machinery; cartoning; loading and wrapping. Would prefer man with degree in Mechanical Engineering, but will consider Industrial or Electrical degree men. Excellent employee benefits in favorable Northern New Jersey location. Send complete resume with education, experience and salary requirements. c/o FLOW, Box 7155.

PARTS STOCKS WANTED

Surplus stocks of Baker-Raulang and Automatic electric truck parts wanted. Write, c/o FLOW, Box 7455.

FOR SALE

One (1) 30" wide used Belt Conveyor —Angle Iron Frame. 24" high drive end, 38" high head end. 9' center to center of pulleys. With controls, less motor. LAKESIDE MACHINE SALES, 1311 St. Clair Ave., Cleveland 14, Ohio.

ELECTRIC FORK TRUCKS

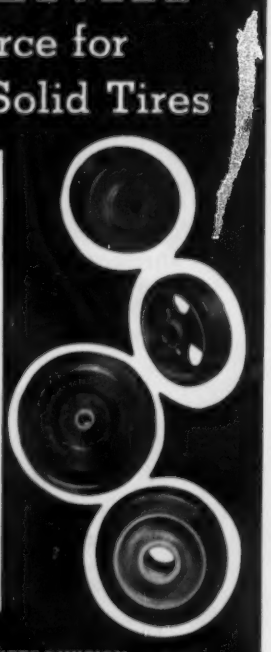
Two Clark and Two Yale Electric. Only one year old. Complete with Batteries and Chargers. 2000 lbs. capacity —24" centers. Guaranteed perfect. These trucks are for the discriminating buyer who would normally buy new equipment but is interested in saving 33⅓%.

Clark-Hopkins Equipment Corp.
Montgomery, Pa.
Phone: North Wales 4401

LINES WANTED

WEST COAST MANUFACTURER with national sales and promotional force desires to expand activities with new lines or product requiring complete program. Construction, truck, industrial or agricultural items in metal preferred. All replies confidential. Give complete details in first letter. Write c/o FLOW, Box 7355.

PHOENIX
... Source for Cured-on Solid Tires



For twenty-five years Phoenix has been manufacturing industrial solid tires. Its central location at Joliet, Illinois, assures prompt delivery... and often lower transportation charges for castings.

Modern quality control procedures assure uniformity of tread stock compounds. EXCLUSIVE WITH PHOENIX is the famed "E-Z" Rolling Tread Compound. Also available are special tread compounds, including static conducting, hard rubber and oil-resisting treads!

WRITE FOR FREE BOOKLET indicating sizes and load specifications. Address:

RUBBER PRODUCTS DIVISION
PHOENIX MANUFACTURING CO.
Joliet, Illinois

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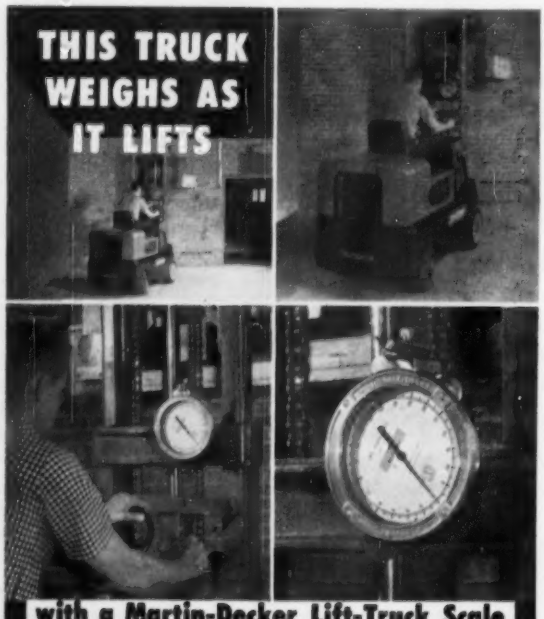
THIS TRUCK WEIGHS AS IT LIFTS



with a Martin-Decker Lift-Truck Scale

This low-cost scale can be put on any hydraulic fork lift. It assures a full, safe load. Protects men and equipment. Used to sum up stock. Prevents floor overloads.

For full data, write Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, Calif., Dept. N-12.

MARTIN-DECKER CORP.
HOME OF THE WEIGHT INDICATOR — LONG BEACH, CALIFORNIA

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Some of Empire's attachments are:

Drum Clamp
All Purpose Clamps
Beer Keg Clamp
Side Shifters (Bar or Plate)
Special Purpose Clamps
Overhead Guards
Load Safety Racks
Booms
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"We Saved *SIX MAN HOURS* on the *FIRST THREE TRUCKS* we loaded!"

"I feel our Magliner Dock Board fully paid for itself in 60 days or less!" *says C. J. Monroe of Rycenga Manufacturing Company, Detroit, Michigan.*

"We equipped our loading dock with a Magliner magnesium dock board after a thorough investigation of other products available, and only after considerable deliberation.

"We considered the possibility of a hydraulic leveling ramp at a cost of about $3,000.00, but found that in addition to the relatively heavy initial investment required, this type of equipment also involved an element of maintenance.

"Just as important to us, however, as the substantial difference in initial expenditure, we felt that Magliner Dock Boards, at less than ¼ the cost, would do a better job for us from an operational viewpoint alone.

"Our plant was recently built and occupies about 60,000 sq. ft. of floor space. It contains a single station well, which is located inside the building. All our shipping and receiving is done at this point, so our Magliner dock board and ramp sees a lot of service.

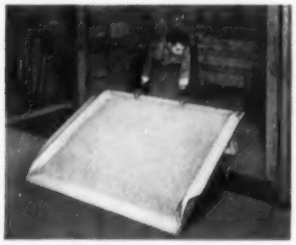
"We saved 6 man hours on the first 3 trucks we loaded! I feel our Magliner fully paid for itself in 60 days or less!

"The old steel plate we used before was a definite safety hazard. Our company regards our Magliner as an exceptional investment just from the safety angle alone. When you consider in addition, the time and money we are saving, plus the increased shipping and receiving capacity we get through the use of our Magliner dock board and ramp — I don't know of a better way to promote efficiency, safety, and economy on the loading dock."

The experience of Rycenga Manufacturing Company is typical of many companies across the nation who have standardized on Magliner Dock Boards. Without exception these companies have found that Magliners speed loading traffic efficiently and safely, and cut loading costs. They too have found that Magline offers *all* the important dock board advantages.

Here are some of the many features which are available only with Magliner Dock Boards: Tire-Saver Safety Curbs—*prevent power truck tire damage.* Triple Strength Curb Ends—*don't break loose, even under continuous daily abuse.* Fully Adjustable Drop Lock—*quickly adjusts to any height or span—automatically locks truck dock boards in position.*

You too can save valuable man hours and cut loading costs with Magliner Dock Boards. Get the facts! Write today for your copy of DB-204.



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